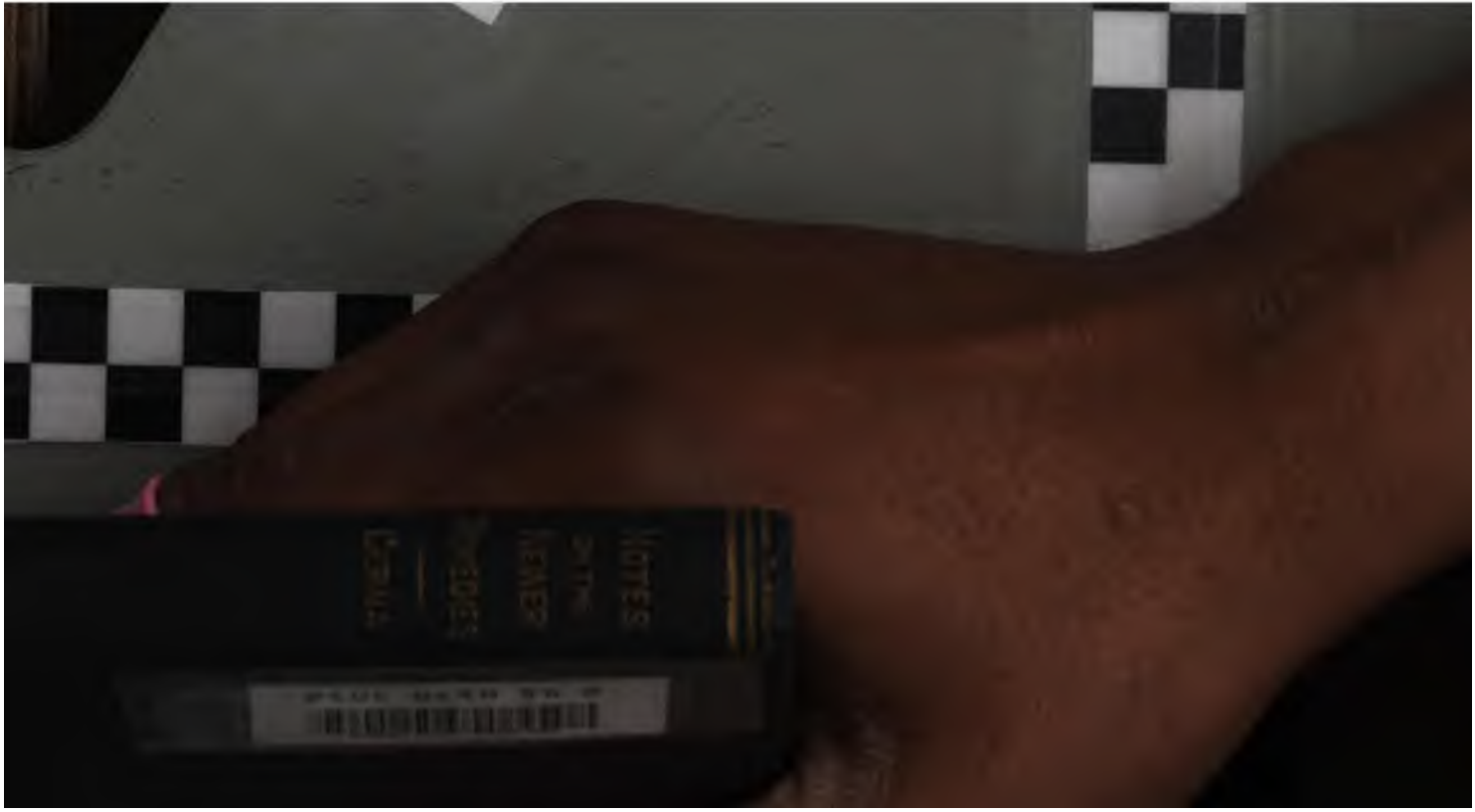


NOTES

ON THE

NEWER REMEDIES,

THEIR THERAPEUTIC APPLICATIONS AND MODES OF ADMINISTRATION.

BY

DAVID CERNA, M.D., PH.D.,

DEMONSTRATOR OF PHYSIOLOGY IN THE MEDICAL DEPARTMENT OF THE UNIVERSITY OF TEXAS, GALVESTON; FORMERLY ASSISTANT IN PHYSIOLOGY, DEMONSTRATOR OF, AND LECTURER ON, EXPERIMENTAL THERAPEUTICS IN THE UNIVERSITY OF PENNSYLVANIA; FELLOW OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA; CORRESPONDING FELLOW OF THE SOCIEDAD ESPAÑOLA DE HIGIENE OF MADRID; ASSOCIATE EDITOR OF SAJOUS' ANNUAL OF THE UNIVERSAL MEDICAL SCIENCES, ETC.

PHILADELPHIA:
W. B. SAUNDERS,
913 WALNUT STREET.
1893.

COLLINS PRINTING HOUSE,
705 JAYNE STREET.

TO

HORATIO C. WOOD, M.D., LL.D.,

OF PHILADELPHIA.

My Dear Doctor Wood:

None are more sensible than myself of the defects of this little volume; and perhaps I will do you no credit by attaching to it your great and honored name. Yet, I have not been able to resist the temptation of dedicating this brochure to you. Pardon the liberty I have taken in so doing, and please accept my dedication as a token of much respect and admiration from the humblest of your pupils and friends.

DAVID CERNA.

Galveston, Texas, 1892.

PREFACE.

THAT I have not attempted to write a work on Therapeutics, goes without saying. One of my objects in preparing these "Notes" is to keep brief records of the therapeutic applications of the newer remedies, especially of those whose usefulness has been more or less ascertained by clinical investigation.

The progress of pharmacology is so great that it is almost impossible for the standard works upon therapeutics to open their pages for the consideration of so many discoveries as are being constantly made in the use of new remedial agents. Modern pathology, which necessarily includes the wide province of bacteriology, has so revolutionized the world of scientific medicine, especially as regards the cause of disease, as to threaten a complete overthrow of every old system of therapeutics.

A new era has certainly been opened for the study of the cause of disease, and *pari passu* with the advance of pathology there is a similar progress in the study and application of new medicinal substances and measures, in all of which is seen the checkless spirit of investigation. It seems, indeed, nay, it is a fact, that no barrier can obstruct the tireless march of science.

The almost daily appearance of new works on pharmacology and therapeutics shows what the spirit of the age demands, and certainly the market cannot be too full of such books, if the immense amount of work that is being constantly done in the laboratory of scientific medicine and in the clinical ward is taken into consideration. The advance of pharmacology is such, that the revised editions of those previously published, and even the new books upon the subject, become old as soon as they leave the printers' office!

Neither the student nor the general and busy practitioner, without neglecting other important matters, can possibly keep abreast of the times in regard to the science and art of modern therapeutics. They would, therefore, it seems to me, welcome a ready-reference vade-mecum. Let such consideration be my only excuse for the publication of this little memorandum. And let it likewise be understood that my chief aim in the preparation of this brochure has been to furnish the practitioner and the student, and in as brief a manner as possible, the most *salient points* concerning the employment of the newer drugs in the treatment of disease. Some of these medicaments, not yet fully studied therapeutically, receive merely a passing mention. I have, for this reason, omitted all discussion as to how such remedies act physiologically, a subject in itself considerably extensive. As it has been said somewhere (and the remarks are applicable to the present case), "chemists are so multiplying compounds, that if each compound is to be thoroughly studied by the physiologist the result would hardly be contained in the world's literature, and it is worth while . . . . to carry these investigations far enough to determine the

practical importance of new agents." For a similar reason I have advisedly omitted all bibliographical references.

Without following any classification, which is almost impossible to adopt in the present unsettled state of pharmacology, I have thought it best to arrange the matter in alphabetical order for the sake of convenience.

Special attention is given to the therapeutic applications of the newer remedies and the modes of their administration. Whenever it is possible, points are given in regard to the origin, physical properties, and solubility of the medicaments considered. Regarding weights and measures, both systems, the apothecaries' and the metric, are employed. It will be observed, and, as I have stated already, that brevity is a feature of these "Notes." I have tried to be brief, bearing in mind that in cases like the present real information, not verbiage, is most urgently demanded.

As will be observed by a careful perusal, comparatively few of the newer remedies are derived from the vegetable kingdom. The greater number of them are synthetic in character.

It is possible that many of these new drugs now in vogue and claimed to be of value as therapeutic agents, will (as has been the fate of some already), on further trial, be laid aside as worthless. This in mind, I shall endeavor to continue my work of review, and propose to revise this brochure as often as the progress of the new era of scientific therapeutics shall demand it.

In the meantime, I shall be pleased to receive from the press, as well as from individuals interested in the matter,

suggestions regarding the character of this compilation. In fact, suggestions are respectfully requested.

All just and unbiased criticism will be given due consideration, knowing, as I do, that my little work is, at present, anything but exhaustive. My "Notes" will perhaps be the groundwork for a larger volume in which the physiological and therapeutic actions of the new medicaments shall be not only touched upon, but also duly discussed.

DAVID CERNA.

GALVESTON, November, 1892.

ERRATA.

The most noticeable errata occurring in the following pages are these:—

Page 47, second line from below, read *Carica* instead of *Caricaya*.
Page 90, first and second line from above, read *lewinin* instead of *lervinin*.
Page 110, tenth line from below, read *Carica* instead of *Caricaya*.
Pages 142 and 167, read *Gynocardate* instead of *Gynocordate*.
Page 148, eleventh line from below, read *Strychnine arseniate* instead of *Strychnine sulphate*.

NOTES

ON

THE NEWER REMEDIES.

ACETOPHENONE.

THIS drug is also known under the common name of *Hypnone;* but technically it is the *Phenylmethylketone*, with a formula of $C_6H_5COCH_3$.

Physical Properties.—Hypnone is a colorless, volatile liquid, with an odor resembling that of bitter almonds. It has a sp. gr. of 1.032. The drug solidifies at 57.2° F. (14° C.), and from this it melts again at 68° F. (20.5° C.).

Solubility.—Hypnone is soluble in alcohol, ether, chloroform, benzin, and oil of sweet almonds. It is insoluble in water and glycerine.

Therapeutic Applications.—*Acetophenone* is generally used in cases of insomnia without pain, and in a variety of nervous disorders. It has a tendency, however, to produce a depressant action, and, therefore, it should be carefully watched.

Administration.—Hypnone is usually given in capsules with oil, or in emulsion with syrup or peppermint water, in single doses of from 1 to 5 minims (0.066 to 0.3 gramme).

ACONITINE.

An alkaloidal principle extracted from the common aconite or monkshood, the *Aconitum napellus.*[1] According to the most recent investigations, the chemical composition of *Aconitine,* also called *Benzoylaconine,* is as follows: $C_{32}H_{43}NO_{11}$.

Solubility.—Most of the salts of aconitine are soluble in water.

Therapeutic Applications.—The *nitrate of aconitine,* the salt most generally used in medicine, is employed with asserted success in acute rheumatism, cephalalgia, and especially in trigeminal neuralgia. Great care, however, must be exercised in the use of this highly poisonous drug.

Administration.—Internally, *aconitine nitrate* may be given in doses of $\frac{1}{250}$ of a grain (0.00025 gramme). Locally, an ointment of the strength of 2 grains to the drachm (0.13 to 3.75 grammes) may be employed. A 2 per cent. solution in oil of the oleate of aconitine has also been highly recommended as a local application in neuralgia.

ADONIDINE.

Adonidine is the glucoside of the *Adonis vernalis.* Its chemical nature has not as yet been determined, but it is said to be free from nitrogen.

Therapeutic Applications.—The remedy is employed as a cardiac stimulant and diuretic, and it is said to be valuable in the pains of heart disease, being especially indicated in aortic and mitral insufficiency.

[1] Monkshood contains other principles, such as *Acomine* ($C_{22}H_{35}NO_9$), *Pseudoaconine* ($C_{27}H_{41}NO_8$), *Pseudaconitine* or *Veratroylaconine* ($C_{36}H_{49}NO_{11}$), and *Picroaconitine* ($C_{25}H_{39}NO_{10}$). All these substances, however, have not been tried in practical medicine.

Administration.—The daily dose of adonidine is from ¼ to ½ of a grain (0.015 to 0.030 gramme).[1]

ÆSCULIN.

This glucoside is obtained from the bark of the horse-chestnut, or *Æsculus hippocastanum*. Its chemical composition is represented by the formula of $C_{15}H_{26}O_9$.

Physical Properties.—*Æsculin* occurs in white, brilliant acicular crystals.

Solubility.—Æsculin is soluble in hot water.

Therapeutic Applications.—Æsculin has been successfully employed in the treatment of malarial disease, especially remittent fever, as a substitute for quinine.

AGARICIN.

This substance is known under the various names of agaric, agaricic, agaricinic, or laricic acid, and *agaricin*. It is obtained from the *Fungus laricis*, or *Polyporus officinalis*, commonly called white alaric, touchwood, or punk. The formula of *agaricin* is $C_{16}H_{30}O_5 + H_2O$.

Physical Properties.—Agaricin is a white powder, with a melting-point of 280.4° F. (138° C.).

Solubility.—The drug is only slightly soluble in water.

Therapeutic Applications.—Agaricin has been used as an antihidrotic in the night-sweats of phthisis, but its value is somewhat uncertain.

Administration.—The drug is best given at night in pill-form, in doses of from 1 to 2 grains (0.064 to 0.128 gramme) every five hours.

[1] Another principle, a glucoside, which occurs in the form of an amorphous powder, has been recently obtained from the *Adonis amereusis*, a Japanese plant. This new glucoside is called *Adonin*, and has a chemical composition represented by the formula of $C_{20}H_{40}O_9$.

AGATHIN.

Agathin is the name of a new drug which chemically is the *Salicyl-α-methyl-phenyl-hydrazone*, obtained by the interaction of salicylic aldehyde and α-methyl-phenyl-hydrazine. It is represented by the formula $C_6H_4(OH).CH=N.N(CH_3).C_6H_5$.

Physical Properties.—Agathin is a white-greenish crystalline substance, odorless and tasteless, with a melting-point of 165.2° F. (74° C.).

Solubility.—The drug is soluble in alcohol and ether; but is insoluble in water.

Therapeutic Applications.—Agathin has been tried with satisfactory results in the treatment of nervous disorders, especially in cases of neuralgia. Good effects have been observed from its use in articular rheumatism and other allied disorders.

Administration.—The dose of agathin varies from 4 to 8 grains (0.26 to 0.52 gramme), three times a day.

ALANTHOL.

Alanthol is a liquid substance obtained from the root of the plant commonly known as Elecampane, the *Inula helenium*. The principle is also called *Inulol*, and its chemical formula is $C_{20}H_{32}O$.

Physical Properties.—Alanthol[1] has a peppermint-like odor and taste, and boils at 392° F. (200° C.).

Therapeutic Applications.—Inulol has not had a very extensive trial as a therapeutic agent, but it has been recommended as a substitute for the oil of turpentine in the treatment of tubercular diseases.

[1] Alanthol is found in combination with *Alanthic* or *Inulic* acid ($C_{15}H_{20}O_2$), which occurs in the form of needles, and *Helenin* (C_6H_8O), an insipid body.

ALDEHYDE.

Aldehyde, or, better, acetic aldehyde, is alcohol deprived of two atoms of hydrogen, its formula being C_2H_4O.

Physical Properties.—Aldehyde is a colorless, limpid liquid, with a peculiar, characteristic ethereal odor. It is pungent, inflammable, and readily absorbs oxygen.

Therapeutic Applications.—The drug is employed in catarrhal congestion of the mucous membranes, and is claimed to be of especial value in ozæna. The remedy has also some anæsthetic properties.

Administration.—Aldehyde is best administered by inhalation from a solution of the strength of from 5 to 10 minims to the pint of hot water (0.3 to 0.6 in 512 grammes).

AMYLENEHYDRATE.

The technical name of this substance is *Dimethylethylcarbinol.* It is a tertiary alcohol, and is represented by the formula of $(CH_3)_2C_2H_5COH$, or $C_5H_{12}O$.

Physical Properties.—*Amylenehydrate* is a colorless, thick liquid of a peculiar penetrating odor. It is hygroscopic, has a sp. gr. of 0.81, and when pure it boils at 216.2° F. (102.5° C.).

Solubility.—The drug is soluble in 8 parts of water at 59° F. (15° C.), the solution becoming turbid when warmed. It mixes with alcohol, ether, and chloroform.

Therapeutic Applications.—Amylenehydrate is a valuable hypnotic, standing in its effects midway between chloral and paraldehyde, and it is usually free from the unpleasant effects often produced by these two latter drugs. The remedy is employed in the insomnias not due to pain, and especially in those resulting from the withdrawal of other narcotics previously used. It is likewise valuable

in whooping-cough of children. The sleep produced by amylenehydrate is quiet and refreshing.

Administration.—The remedy is given in single doses of from 1 to 2 drachms (4 to 8 grammes) in capsules by the mouth, or by the rectum. For children the quantity of the drug employed should not exceed 3 or 4 minims (0.018 to 0.025 gramme).

AMYL NITRITE.

Nitrite of amyl is prepared by the action of nitric and nitrous acids upon amylic alcohol. It is an amyl nitrous ether.

Physical Properties.—*Amyl nitrite* is a clear, volatile, inflammable, yellowish liquid of a penetrating pear-like odor, subacid in reaction, and with a sp. gr. of 0.873.

Solubility.—Amyl nitrite is soluble in alcohol, but insoluble in water.

Therapeutic Applications.—The drug has been classed as a depresso-motor. It is certainly useful in relaxing local or general spasms such as asthma, hiccough, and pertussis. The remedy is of special value in angina pectoris. It is similarly employed in all kinds of convulsions, but ought not to be administered in puerperal eclampsia, in which it may cause hemorrhage through relaxation of the bloodvessels. Amyl nitrite may also be used as an antiseptic.

Administration.—Amyl nitrite is administered in doses of from 3 to 5 minims (0.2 to 0.3 gramme), or by inhalation in the same quantity.

ANALGEN.

Analgen, which has recently been introduced into practical medicine, is a derivative of chinoline. It is the

Ortho-ozethylanamono-acetyl-amido-chinoline. It is represented by this formula: $C_{26}H_{14}N_2O_4$.

Physical Properties.—Analgen has a melting-point of 311° F. (155° C.).

Solubility.—This new agent is readily soluble in hot water, in alcohol, and the dilute acids. It is almost insoluble in cold water.

Therapeutic Applications.—Analgen has been found to possess antipyretic and analgesic properties. It is said to be of value in the treatment of rheumatism.

Administration.—The drug may be given in doses of 15 grains (1 gramme).

ANEMONINE.

Anemonine is the alkaloidal principle of the *Anemone pulsatilla.* Its chemical composition is put down as $C_{15}H_{12}O_6$.

Physical Properties.—The alkaloid occurs in colorless crystalline needles, having a melting-point of 304.6° F. (152° C.).

Solubility.—Anemonine is readily soluble in warm alcohol, but insoluble in water and ether.

Therapeutic Applications.—This remedy has been employed with apparent success in painful affections of the female pelvic organs, such as dysmenorrhœa, perimetritis, ovariosalpingitis, and others.

Administration.—The alkaloid is given in doses of from $\frac{1}{12}$ to $\frac{2}{7}$ of a grain (0.05 to 0.20 gramme).

ANISIC ACID.

By oxidation of *Anethol* ($C_{10}H_{12}O$), a constituent of anise and fennel oils, *Anisic acid,* an isomer of methyl-salicylic acid, is obtained. The chemical composition of anisic acid is $C_6H_4(OCH_3)COOH$.

Physical Properties.—Anisic acid appears in the form of colorless prisms, having a melting-point of 356° F. (180° C.).

Solubility.—The acid is freely soluble in hot and cold alcohol, but insoluble in water.

Therapeutic Applications.—The drug possesses antiseptic and antipyretic properties; as such, it has been used in the treatment of wounds and in that of acute articular rheumatism. Its effects have been satisfactory.

Administration.—Anisic acid is seldom given by itself. The *sodium salt* is the preparation generally employed, in doses of 15 grains (1 gramme).

ANNIDALIN.

This substance must not be confounded with aristol, also known under the same name of annidalin. The agent before us is the *Dithymol triiodide.*

Physical Properties.—*Annidalin* occurs as a reddish-brown powder, which is decomposed by heat and light, with the evolution of iodine.

Solubility.—The drug is readily soluble in chloroform and ether; slightly so in alcohol; but is insoluble in water.

Therapeutic Applications.—Annidalin is usually applied locally as a substitute for iodoform and aristol in those diseases for which these two remedies are employed.

Administration.—The drug is used as the pure powder, or in the strength of 10 per cent.

ANTHRAROBIN.

A substance obtained from *alizarin*, the crystalline principle of the *Rubia tinctorum* (?) or common madder.

Anthrarobin is also called *Desozyalizarin.* It is a derivative of phenol and allied to chrysophanic acid. Its formula is $C_6H_4\begin{matrix}C(OH)\\ \diagup\quad\diagdown\\ CH\end{matrix}C_6H_2(OH)_2$.

Physical Properties.—Anthrarobin is a yellowish powder. A solution of it exhibits a brown color, changing to a green, and finally to a violet one, these changes being due to the amount of oxygen taken up.

Solubility.—This drug is readily soluble in alcohol, glycerin, or in dilute alkaline solutions; sparingly so in ether and chloroform; insoluble in water or acids.

Therapeutic Applications.—The chief use of anthrarobin is in skin diseases, and has been of service especially in psoriasis, pityriasis versicolor, and herpes.

Administration.—The remedy is applied locally in the form of ointment of the strength of not more than 20 grains to the ounce (1.3 to 30 grammes).

ANTICYLIC ACID.

Under the name of *Anticylic acid* there occurs upon the market a white fragrant powder, with a refreshing acid taste.

Solubility.—Anticylic acid is readily soluble in water, alcohol, and glycerin.

Therapeutic Applications.—The remedy is said to be antipyretic, and has been found of service in pneumonia, enteric fever, and acute articular rheumatism.

Administration.—The dose of anticylic acid is set down as $\frac{1}{100}$ of a grain (0.0006 gramme).

ANTIFEBRIN.

The proper term for this drug, Antifebrin being its original patent name, is *Acetanilid* or *Phenylacetamid.* It

is an anilin in which one atom of hydrogen has been replaced by the radical acetyl. Its chemical composition is C_6H_9NO or $NHC_6H_5C_2H_3O$.

Physical Properties.—*Acetanilid* is a white colorless crystalline substance, and when pure it occurs in brilliant rhombic tables. The crystals melt at 235° F. (112.8° C.). It is broken up into its original components by the prolonged action of hydrochloric acid.

Solubility.—Antifebrin is readily soluble in ether and chloroform; in alcohol in the proportion of 1 part to 3½ parts. It is insoluble in water at ordinary temperatures.

Therapeutic Applications.—This drug has been advantageously employed chiefly as an antipyretic in fevers, in phthisis, and pulmonary diseases generally; as a sedative in epilepsy, ataxia, and chorea; as a hæmostatic in epistaxis and hæmoptysis; and as an antiarthritic in rheumatic affections. It has also been recommended as a local antiseptic.

Administration.—Acetanilid is given to adults in doses of from 5 to 10 grains (0.3 to 0.6 gramme), or as high as 30 grains (2 grammes) in the course of the day. It is best administered in capsules or wafers.

ANTIHYDROPIN.

Antihydropin, a crystalline body whose chemical nature has not been investigated as yet, is thought to be the active principle of the *Blatta orientalis* or common cockroach.

Therapeutic Applications.—This new agent has been chiefly used as a diuretic in dropsical affections.

Administration.—The daily dose of antihydropin is put down as 10 to 30 grains (0.6 to 1.3 gramme).

ANTIKAMNIA.

The proprietary name of *Antikamnia* is given to a fine white powder, whose composition has not yet been definitely determined, but is supposed to be chiefly made up of acetanilid and bicarbonate of sodium. Some investigators have detected traces of caffeine, tartaric acid, and other constituents. Although the drug is claimed to be of service in influenza and its allied disorders, the administration of the drug is unwarrantable while the true nature of the medicament remains unknown.

ANTINERVIN.

This drug, also known under the name of *Salicyl-bromanilide*, is composed of salicylanilid and bromo-acetanilid. It is really a mixture made up of 1 part each of bromide of ammonium and salicylic acid, and 2 parts of antifebrin or acetanilid. It is also termed *Salbromalide*.

Therapeutic Applications.—*Antinervin* has been recommended as an anodyne especially in cases of neuralgia when phenacetine and antipyrine fail to do any good.

Administration.—The dose of antinervin is given as 15 grains (1 gramme).

ANTIPYRIN.

The scientific name of this drug is *Dimethyloxyquinizine* or *Phenyldimethylpyrazolon*, or still *Dehydrodimethylphenylpyrazine*. It has similarly been called *Analgesin*, *Methozin* and *Phenazon*. Antipyrin is a derivative of coal-tar, its chemical composition being $C_6H_5N\begin{matrix}CO.CH\\ \diagup\!\diagdown\\ NCH_3.CCH_2\end{matrix}$ or $C_{11}H_{12}N_2O$. It can also be prepared synthetically.

Physical Properties.—Antipyrin is a reddish-white crystalline powder, odorless, and of a somewhat bitter taste, with a melting-point of 235.4° F. (113° C.).

Solubility.—Antipyrin is readily soluble in water, rectified spirit, and chloroform; in ether in the proportion of 1 part to 50.

Therapeutic Applications.—The uses of this drug are well known. The medicament is valuable as a general antipyretic and analgesic. It is essentially useful in all forms of neuralgia, and, to a considerable extent, in epilepsy. It is claimed to have produced good effects in diabetes mellitus, and the same may be said in regard to its action in chorea. It has rendered good service in incontinence of urine, in uterine cancer, dysmenorrhœa, and even the pains of labor. Antipyrin has proved beneficial in exophthalmic goitre, nocturnal pollutions, pains of tubercular meningitis, asthma (essential or of cardiac origin), distress of aortic aneurism, etc., and in infantile diarrhœas. Good is similarly said to be produced by the drug in skin diseases, such as urticaria, erythema nodosum, senile pruritus, and others. Combined with cocaine it has relieved obstinate vomiting. The drug, however, must be carefully watched on account of its depressing effect upon the circulation, especially the heart.

Administration.—Antipyrin may be given in doses of from 5 to 30 grains (0.3 to 2 grammes). It can also be employed hypodermatically.

ANTISEPSIN.

The common name *antisepsin*, also called *asepsin*, is given to the *Mono-* or *Para-mono-brom-phenyl-acet-amide* or *Paramono-brom-acet-anilid*. Its chemical formula is $C_6H_4BrNHC_2H_3O$.

Physical Properties.—The drug occurs in odorless and tasteless crystals, with a melting-point of 328° F. (164.4° C.).

Solubility.—The remedy is readily soluble in alcohol and ether, slightly so in glycerin, and insoluble in water.

Therapeutic Applications.—Antisepsin is employed as an antipyretic, analgesic, and antiseptic. It has given satisfactory results in cases of typhoid fever, pneumonia, and phthisis; as a local application, in wounds and in the treatment of piles.

Administration.—The dose of this drug is ½ to 1 grain (0.03 to 0.06 gramme), three times a day.

ANTISEPTIN.

This substance is known also under the name of *Zinc boro-thymo-iodide.* It is a mixture composed of about 80 parts of the sulphate of zinc, 2 parts of thymol, and 10 parts of boracic acid. *Antiseptin* must not be confounded with *antisepsin* or with *antiseptol.*

Therapeutic Applications.—Antiseptin is chiefly used as an antiseptic.

ANTISEPTOL.

The *Iodo-sulphate of cinchonine* is designated by the above name.

Physical Properties.—*Antiseptol* appears as a reddish-brown powder.

Solubility.—The remedy is soluble in water, alcohol, and chloroform.

Therapeutic Applications.—This drug is mainly employed as a substitute for iodoform.

ANTITHERMIN.

The chemical name of this drug is *Phenyl-hydrazin-levulinic acid,* being a substance allied to antipyrin. It is obtained by the interaction of phenylhydrazin and acetopropionic acid, and is represented by this formula: $C_6H_5N_2HC—(CH_3)—CH_2COOH$.

Physical Properties.—The remedy occurs in colorless crystals.

Solubility.—The remedy is but little soluble in alcohol; it is insoluble in water.

Therapeutic Applications.—*Antithermin* is used as an antipyretic in those febrile affections for which antipyrin is employed.

Administration.—The dose of antithermin is about 5 grains (0.3 gramme).

APIOL.

This body is contained, in combination with other substances, in the fruit of the common parsley, *Petroselinum sativum* or *Carum petroselinum.* Its formula is as follows: $C_{12}H_{14}O_4$.

Physical Properties.—The drug occurs in long, white needles, with a faint parsley odor. It melts at 86° F. (30° C.), and boils at 561.2° F. (294° C.); its sp. gr. is 1.015.

Solubility.—*Apiol* dissolves readily in alcohol and ether, but is insoluble in water.

Therapeutic Applications.—The remedy has been used with apparent success in the treatment of dysmenorrhœa, and is also said to have given good results as an antiperiodic against malarial disorders.

Administration.—Apiol (this must not be confounded with the alcoholic liquid extract obtained from parsley

seeds) may be given in doses of from 10 to 15 grains (0.65 to 1 gramme).

APOCODEINE.

This drug is said to be prepared in the same manner as apomorphine. The salt of *apocodeine* generally used is the hydrochlorate, the chemical composition of which is $C_{18}H_{19}NO_2$, HCl.

Physical Properties.—*Apocodeine hydrochlorate* occurs as an amorphous powder.

Solubility.—The salt is soluble in water.

Therapeutic Applications.—Apocodeine is employed for its expectorant properties, being of especial value in chronic bronchitis.

Administration.—The dose of the salt is 3 to 4 grains (0.2 to 0.25 gramme), and is best administered in pill-form. The remedy may also be given subcutaneously in solution of the strength of 2 per cent.

ARBUTIN.

The glucoside of the common bearberry or *Arctostaphylos uva ursi*, its chemical formula being $C_{12}H_{16}O_7$, $\frac{1}{2}$ Aq.

Physical Properties.—*Arbutin* appears in long, colorless, brilliant needles, having a melting-point of 338° F. (170° C.).

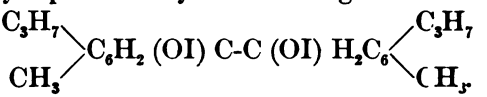
Solubility.—Arbutin is soluble in cold water in the proportion of 1 part to 8; in alcohol, in 1 to 16 parts.

Therapeutic Applications.—The glucoside is employed in diseases of the urinary tract, as one of the most valuable of antiseptics, its effects being due to the *hydrochinone* which is set free in the organism.

Administration.—The dose of arbutin is 75 grains (5 grammes) per day, in divided amounts.

ARISTOL.

Aristol is the *Dithymol-diiodide*, also commonly called annidalin, but must not be confounded with this latter substance, which is the *dithymol-triiodide*. Aristol is a substitution-compound from two molecules of thymol ($C_{10}H_{13}HO$), in which the two radicals of hydroxyl (HO) have been replaced by two iodoxyl radicals (IO). It is chemically represented by the following formula:—



Physical Properties.—Aristol is a reddish-brown crystalline powder, odorless or of a somewhat aromatic odor. It contains 45.80 per cent. of iodine.

Solubility.—The remedy readily dissolves in ether, collodion, and traumaticin; it is slightly soluble in chloroform, and is insoluble in water and glycerin.

Therapeutic Applications.—Aristol has been used with success in cutaneous affections and syphilitic lesions as a substitute for iodoform. It is especially valuable as a cicatrizant in the ulcers of tertiary syphilis and in lupus and psoriasis.

Administration.—The drug is generally employed as a dusting-powder, or in the form of ointment of a strength varying from ½ to 1 drachm (1.95 to 3.9 grammes) to the ounce (31.10 grammes) of vaseline.

ASAPROL.

This substance, recently introduced into the market and in practical medicine, occurs in acicular crystals. It is the *Calcium-βnaphthol-αmono-sulphonate*, with a formula of $(OH.C_{10}H_6SO_3)_2Ca$, 3 Aq.

Solubility.—The drug is readily soluble in water and alcohol.

Therapeutic Applications.—*Asaprol* has been chiefly recommended as an antiseptic in solutions of the strength of 5 per cent. These solutions have prevented the growth of the microbes of Asiatic cholera, the same being destroyed by stronger solutions. The remedy is said to have acted advantageously in acute articular rheumatism.

Administration.—The drug may be given in doses of from 15 to 60 grains (1 to 4 grammes).

ASEPTOL.

This body goes under the various names of *Orthophenol, Sozolic acid, Sulphocarbolic acid,* and *Sulphonic acid,* and is obtained from the interaction of concentrated sulphuric acid and phenic acid. The formula of *aseptol* is C_6H_4-$OHSO_3OH$.

Physical Properties.—The drug crystallizes in small, deliquescent needles, but generally appears in the form of a heavy, reddish liquid, of a syrupy consistency. It has an astringent taste and an odor resembling that of phenol. Its sp. gr. is 1.400.

Solubility.—*Aseptol* is freely soluble in water, alcohol, and glycerine.

Therapeutic Applications.—The remedy has been advantageously employed mainly as an antiseptic in diseases of the bladder, eye, and skin. It has rendered good service in the treatment of diphtheritic laryngitis and in pharyngitis. Locally, it has been recommended in gingivitis and pyorrhœa.

Administration.—Aseptol is best administered in the form of a lemonade of the strength of 45 grains to the pint of water (3 grammes in 33.6 grammes). As a local

application, solutions of the strength varying from 1 to 10 per cent. may be used.

ASPARAGIN.

Asparagin is a vegetable principle obtained from the *Asparagus officinalis* and various other allied plants.

Physical Properties.—Asparagin itself appears as a crystalline body, but the quite recent combination, the *asparagin hydrargyrate*, in ½ per cent. solution, is a colorless, odorless, limpid liquid, having a sharp metallic and acrid taste.

Therapeutic Applications.—Asparagin has diuretic properties, and has been used as such with asserted success. The hydrargyrate has of late been tried, with alleged excellent results, as an antisyphilitic.

Administration.—The *hydrargyrate of asparagin* is administered hypodermatically in single doses of ⅙ of a grain (0.01 gramme).

ASPIDOSPERMINE.

The name of *Aspidospermine* is given to an alkaloid obtained from the bark of the quebracho plant, or *Aspidosperma quebracho*. The principle has this composition: $C_{22}H_{30}N_2O_2$.

Physical Properties.—Aspidospermine occurs in prismatic colorless crystals.

Solubility.—The alkaloid is soluble in 48 parts of alcohol and in 106 parts of ether. It is insoluble in water.

Therapeutic Applications.—The drug has been employed with apparent success in affections of the respiratory tract, such as asthma, dyspnœa, and others.

Administration.—Aspidospermine is given in doses of from ¼ to ½ of a grain (0.016 to 0.03 gramme).

AURI BROMIDUM.

(Bromide of Gold.)

Bromide of gold has been found of service in the treatment of migraine and epilepsy. The dose of the drug is from $\frac{1}{100}$ to $\frac{1}{10}$ of a grain (0.0006 to 0.006 gramme).

AURI CHLORIDUM.

(Chloride of Gold.)

This salt has of late been employed with success in the treatment of phthisis and other tubercular affections. It is claimed to be of especial value in lupus in doses of $\frac{1}{160}$ of a grain (0.00043 gramme), three times a day.

AURI MONOCYANIDUM.

(Monocyanide of Gold.)

The formula of this substance is AuCN. It occurs as a yellow powder.

Solubility.—The drug is insoluble in water, ether, and alcohol.

Therapeutic Applications.—The drug has been employed with asserted success in the treatment of tubercular diseases.

Administration.—This medicament is best administered in cachets, in doses of from $\frac{1}{16}$ to $\frac{1}{4}$ of a grain (0.004 to 0.016 gramme).

AURI TRICYANIDUM.

(Tricyanide of Gold.)

Tricyanide of gold is used for the same purposes for which the monocyanide is employed, and in the same doses.

BEBEERINE.

The principal alkaloid of the *Nectandra rodiæi.*

Physical Properties.—*Bebeerine* occurs as an amorphous powder, odorless, and of an exceedingly bitter taste.

Solubility.—This alkaloid is slightly soluble in water, but it is readily dissolved by alcohol and ether.

Therapeutic Applications.—The *sulphate* of bebeerine, the salt generally employed, is used as an antiperiodic in the treatment of certain forms of neuralgia of malarial origin.

Administration.—The drug is administered in doses of from 2 to 5 grains (0.15 to 0.3 gramme).

BENZANILIDE.

This compound, named likewise *Phenyl-benzamide* and *Benzoyl-anilide,* has a chemical formula of C_6H_5, NH, CO, C_6H_5. It is obtained from the interaction of benzoic anhydride or benzoyl chloride and aniline, and bears the same relation to benzoic acid as does acetanilid to acetic acid.

Physical Properties.—*Benzanilide* appears as a white crystalline powder, with a melting-point of 323.6° F. (162° C.).

Solubility.—The drug is soluble in 58 parts of cold and 7 parts of hot alcohol. It is not soluble in water.

Therapeutic Applications.—The clinical uses of benzanilide are allied to those of acetanilide. It is employed as an antipyretic, especially in the febrile affections of children.

Administration.—The usual dose for adults is from 3 to 12 grains (0.18 to 0.75 gramme). For children up to 12 years of age, about one-half the amount stated.

BENZONAPHTHOL.

Benzonaphthol is the *Benzoate of beta-naphthol*, the chemical composition of which is represented by this formula: $C_{10}H_7O$, C_7H_5O. It is obtained by the action of benzoyl on β-naphthol.

Physical Properties.—This drug occurs as a white crystalline powder, tasteless and odorless, with a melting-point of 230° F. (110° C.).

Solubility.—Benzonaphthol dissolves in alcohol, especially in hot alcohol. It is insoluble in water and ether.

Therapeutic Applications.—The drug is said to break up in the intestinal tract into its components. It is generally used as an antiseptic, and acts also as a diuretic. Recently it has been found of service in the treatment of simple and tubercular enteritis.

Administration.—Benzo-naphthol is best given in wafers, in doses of from 4 to 8 grains (0.25 to 0.50 gramme).

BENZOYL-GUAIACOL.

The common name of *Benzosol* is given to the substance under consideration. It is the *Benzoate of guaiacol*, which contains 54 per cent. of guaiacol. In this compound the hydrogen atom of the hydroxyl is substituted by benzoyl. Its chemical nature is represented by the formula of

$$C_6H_4\begin{cases}OCH_3\\OCOC_6H_5.\end{cases}$$

Physical Properties.—*Benzosol* is a colorless and almost tasteless and odorless powder, with a melting-point varying from 132.8° to 136.4° F. (56° to 58° C.).

Solubility.—*Benzoyl-guaiacol* is perfectly soluble in hot alcohol, ether, and chloroform; but it is insoluble in water.

Therapeutic Applications.—*Benzosol* is especially useful as an antiseptic in intestinal disorders and in phthisis pulmonalis. Its lack of taste makes it a superior remedy to the guaiacol itself, in the treatment of the latter affection.

Administration.—Benzoyl-guaiacol is best given in chocolate pastilles, with peppermint oil, sugar, or in powder-form. The dose of the drug is from 3 to 12 grains (0.18 to 0.75 gramme).

BENZOYL-EUGENOL.

This body, which occurs in acicular, colorless, and odorless crystals, is a derivative of *Eugenol.* It has a melting-point of 158.9° F. (70.5° C.), and is represented by this formula: $C_6H_3.C_3H_5(OCH_3)CO_2C_6H_5$.

Solubility.—The drug is soluble in alcohol, ether, chloroform, and acetone. It is insoluble in water.

Therapeutic Applications.—*Benzoyl-eugenol* is at present being tried in the treatment of tuberculous diseases. The proper dose has not been accurately determined.

BENZO-PHENONEIDE.

This new compound is obtained from an aniline dye, and chemically is the *Tetramethylo-diapsido-benzo-phenoneide.*

Therapeutic Applications.—The drug has been efficaciously employed as a microbicide. It has given excellent results in the treatment of obstinate ulcers, and particularly in that of purulent keratitis and chronic phlyctenular ophthalmia. The remedy is locally applied.

BETOL.

Betol goes under various names, such as *Naphtalol*, *Naphtosalol*, and *Salinaphtol*. It is a salicylate of naphtol ether, or a salicylate of β-naphtol. Betol is closely allied to salol, and is represented by this formula: $C_6H_4OHCO\text{-}OC_{10}H_7$.

Physical Properties.—This remedy occurs, when absolutely pure, as a crystalline, colorless powder, without odor or taste. It melts at 203° F. (95° C.).

Solubility.—Boiling alcohol in the proportion of 1 to 3, and ether, benzene, and linseed-oil readily dissolve the drug. Betol is slightly soluble in alcohol at ordinary temperatures and in turpentine. It is insoluble in water and glycerine.

Therapeutic Applications.—Betol has been used with advantage in articular rheumatism, vesical catarrh, and cystitis. Gonorrhœa has been benefited by the drug.

Administration.—Betol can best be administered in pill-form or in emulsion, in doses of from 2 to 5 grains (0.15 to 0.3 gramme). For bougies, the drug may be used as an ointment of the strength of 1 part to 4 parts of cacao-butter.

BOLDOA FRAGANS.

Recent investigations have pointed to the existence in this plant of a glucoside termed *Boldin*,[1] the chemical nature of which still remains unknown.

Therapeutic Applications.—The active principle, or Boldin, is said to act as a local anæsthetic. A tincture of

[1] *Boldoa chiliensis* is also said to yield a principle similarly termed *Boldin*, which has been used in biliary calculi and as a hypnotic in doses of 3 grains (0.25 gramme) a day, in capsules.

the plant has been employed, with asserted success, as a diuretic in diseases of the liver and in rheumatism.

Administration.—The tincture of *Boldoa* is given in doses of from 10 to 15 minims (0.6 to 1 gramme).

BROMAL HYDRATE.

Bromal hydrate is analogous to chloral hydrate. It is obtained by the action of bromine upon alcohol. The alcohol, by losing 2 atoms of hydrogen, is first converted into aldehyde, and the other 3 atoms are then replaced by the bromine. Its formula is C_2HBr_3O,H_2O.

Physical Properties.—The drug occurs in the form of a white, crystalline substance, with a pungent taste and an odor resembling that of chloral.

Solubility.—The *Hydrate of bromal* is soluble in water, but somewhat less so than chloral.

Therapeutic Applications.—Bromal hydrate has analgesic and hypnotic properties, and is used for the same purposes as chloral, but it is more powerful than the latter remedy.

Administration.—The drug is given in doses of from 2 to 5 grains (0.12 to 0.30 gramme).

BROMAMIDE.

A compound said to contain 75 per cent. of bromine. It belongs to the anilide group, and is represented by the formula of $C_6H_2Br_3NH.HBr$.

Physical Properties.—*Bromamide* appears in the form of acicular crystals which are colorless, odorless, and tasteless. The drug melts at 243° F. (117.2 C.), and volatizes at 310° (154. 4° C.).

Solubility.—The drug is readily soluble in chloroform, ether, and the fixed oils; slightly soluble in alcohol, but insoluble in either cold or hot water and in benzine.

Therapeutic Applications.—Bromamide possesses anti-neuralgic and antipyretic properties. The remedy has been used with advantage in rheumatic fever, typhoid fever, and in the treatment of both acute and chronic articular rheumatism. It has also been used with asserted success in several forms of neuralgia and in dropsy of nephritic origin.

Administration.—The dose of bromamide is from 10 to 15 grains (0.6 to 1 gramme), and is best given in wafers, capsules, or in the form of emulsion. For children, in amounts from 1 to 5 grains (0.06 to 0.3 gramme).

BROMOFORM.

The action of bromine upon equal parts of methylic alcohol and caustic potash gives rise to the formation of *Bromoform*, a drug also known under the name of *Tribromomethane*. This body is analogous to chloroform, and when chemically pure is represented by the formula of $CHBr_3$.

Physical Properties.—Bromoform is a colorless, sweet, limpid liquid with an agreeable odor. It boils at from 296.6° to 308.8° F. (147° to 151° C.); solidifies at 36° F. (2.5° C.); and its sp. gr. is 2.83 at 32° F. (0° C.).

Solubility.—The drug is soluble in alcohol and ether, and only slightly soluble in water.

Therapeutic Applications.—Bromoform is powerful and prompt in its action. It has been used chiefly as an antispasmodic, analgesic, and antiseptic. The drug is of especial value in the treatment of whooping-cough. Locally applied, it has given excellent results in ozæna and in tuberculous and other ulcers. Bromoform has anæsthetic properties similar to those of chloroform.

Administration.—For children, the remedy is best given in alcoholic solutions, in syrup of acacia, or combined with paregoric, in doses of from 1 to 5 minims (0.06 to 0.30 gramme) three times a day.

BROMOL.

The name of *Tribromophenol* is likewise given to the above drug, and it is prepared by the action of bromine upon an aqueous solution of phenol. The compound has a chemical composition of $C_6H_2Br_2OH$.

Physical Properties.—When pure, *bromol* occurs as a white, crystalline substance of an astringent, sweetish taste and a disagreeable odor resembling that of bromine. Bromol melts at 203° F. (95° C.).

Solubility.—Tribromophenol is readily soluble in alcohol, ether, chloroform, and glycerine, and in the fatty and ethereal oils, but is insoluble in water.

Therapeutic Applications.—Bromol has been employed successfully as a local remedy in diphtheria and internally in cholera infantum, and in typhus as an intestinal disinfectant.

Administration.—For local use, bromol is applied from a solution in glycerine of the strength of 1 to 25. Internally, especially in cholera of children, it can be given in doses of from $\frac{1}{12}$ to $\frac{4}{17}$ of a grain (0.005 to 0.015 gramme).

BROUSNIKA.

This plant, known under the common name of *red bilberry* and *red whortleberry*, is the *Vaccinium vitis idœa*. It has not been analyzed as yet.

Therapeutic Applications.—Brousnika has been tried, with excellent results, as an anti-rheumatic; it is said to have relieved and even cured rebellious cases of rheumatism

in which all other treatment, medicinal and otherwise, had proved of no avail.

Administration.—Red bilberry is given in the form of decoction, in doses of from 2 to 4 drachms (30 to 60 grammes) in water, during the course of 24 hours.

BRYONIA ALBA.

This plant contains two amorphous alkaloids, of an extremely bitter taste, *Bryonine* and *Bryonidine*, this latter being a powerful irritant to the gastro-intestinal mucous membrane. The chemical nature of the chief alkaloid, Bryonine, which by some investigators is said to be a glucoside, is represented by $C_{18}H_{30}O_{19}$.

Therapeutic Applications.—The plant itself is used in the treatment of whooping-cough. Bryonine has been recommended in hemorrhages.

Administration.—*Bryonia* may be given in the form of powder in doses of from 7½ grains to 1 drachm (0.5 to 4 grammes).

BUTYL-CHLORAL HYDRATE.

This body is also known by the name of *Croton-chloral hydrate*, and is produced by the action of chlorine upon aldehyde, its formula being $C_4H_5Cl_3O,H_2O$.

Physical Properties.—*Butyl-chloral hydrate* occurs in brilliant crystalline tables.

Solubility.—The drug is soluble in rectified spirit and only slightly soluble in water.

Therapeutic Applications.—Butyl-chloral is used as an analgesic and hypnotic. It is valuable in neuralgias, and especially in insomnia due to heart trouble.

Administration.—The dose is 5 grains (0.30 gramme) every hour, and may be given until 30 grains (2 grammes) are taken.

CACTUS GRANDIFLORUS.

This plant, designated also by the name of *Cereus grandiflora*, has recently been investigated, and is said to contain an alkaloid called *Cactina*. The chemical composition of this active principle has not yet been made out.

Therapeutic Applications.—The plant has been successfully employed as a stimulant in diseases of the heart, especially myocarditis and valvular lesions. It has also been used with good effect in cardiac dropsy.

Administration.—Two preparations are in use, the *tincture* and the *fluid extract*. Of the first, the dose is from 15 to 20 minims (0.90 to 1.20 gramme), and of the second, 5 to 10 minims (0.30 to 0.60 gramme) three times a day.

CAFFEINE TRIIODIDE.

Several salts of caffeine have of late claimed recognition as valuable therapeutic agents, chief among which is the one under consideration. The *triiodide of caffeine* is the *Caffeine di-iodide-hydro-iodate*,[1] and is represented by the formula of $(C_{18}H_{10}N_4O_2I_2HI)_2+3H_2O$.

Physical Properties.—The triiodide of caffeine appears in long, dark-green prisms.

Solubility.—The salt is freely soluble in alcohol.

Therapeutic Applications.—The drug when given internally is said to liberate iodine in the stomach. It is certainly non-depressant, and is employed as a general heart tonic, stimulant, and diuretic, especially in cases of dropsy of cardiac origin.

[1] The *carbolate*, *cinnamylate*, *boro-citrate*, *salicylate*, and *phtalate* of caffeine have been highly recommended for hypodermatic use, owing to their solubility and non-irritating action upon the mucous membranes. The *boro-citrate* is said to possess antiseptic properties, due to the boric acid.

Administration.—The dose of the medicament may be set down as from 2 to 4 grains (0.12 to 0.25 gramme).

CALCIUM SALICYLATE.

The chemical composition of this salt is $CaC_7H_4O_3,H_2O$.

Physical Properties.—The *Salicylate of calcium* occurs as a white, crystalline powder, tasteless and odorless.

Solubility.—The salt is not readily soluble in water.

Therapeutic Applications.—*Calcium salicylate* is of especial value in the intestinal disorders of children, such as diarrhœa and gastro-enteritis.

Administration.—The drug may be administered in doses of from 8 to 24 grains (0.52 to 1.55 gramme).

CAMPHORIC ACID.

Camphoric acid is obtained by the oxidation of camphor through the action of acids, especially nitric acid. It is a dibasic acid, and has this composition : $C_8H_{14}(COOH)_2$.

Physical Properties.—Camphoric acid occurs in acicular crystals, without odor and of a weak acid taste. It melts at from 175° to 178° F. (79° to 81° C.).

Solubility.—Camphoric acid is soluble in hot water, alcohol, ether, and in fatty oils. It is almost insoluble in cold water.

Therapeutic Applications.—The acid has been used with satisfactory results in the treatment of acute and chronic catarrhal affections of the mucous membranes, such as angina, acute bronchitis, coryza, and others; in acute and chronic cystitis. It has lately been asserted to be of especial service in the night-sweats of phthisis.

Administration.—The drug is best given in capsules, in doses of from 20 to 30 grains (1.5 to 2 grammes).

CANNABINE.

From *Cannabis sativa*, identical with *C. indica* or Indian hemp, two bodies have been extracted: *Cannabine*, an alkaloid, and *Cannabinone*.[1]

Physical Properties.—Cannabine occurs as a syrupy, brown liquid; but the *tannate* of the alkaloid is a yellowish-brown powder, of a bitter taste and almost odorless.

Solubility.—The tannate of cannabine is freely soluble in water rendered alkaline; it is slightly soluble in alcohol, and insoluble in water and ether.

Therapeutic Applications.—Both principles have been used as hypnotics, but *cannabine* is said to be especially valuable in acute mania and nervous insomnia.

Administration.—The daily dose of cannabine is from 1 to 5 grains (0.06 to 0.30 gramme). The *tannate* may be given in doses of from 2 to 10 grains (0.03 to 0.60 gramme).

CANTHARIDIN.

This body is the non-alkaloidal active principle obtained from several species of the Spanish fly or beetle, coleopterous insects, especially the *Cantharis vesicatoria*. *Cantharidin* is represented as having this composition: $C_{10}H_{12}O_4$.

Physical Properties.—The new agent occurs as a colorless, crystalline substance made up of four-sided tables.

Solubility.—*Cantharidin* is readily taken up by chloro-

[1] *Cannabinone* is a resinous, balsamic body, obtained from the flower-tops of the plant, and is soluble in alcohol, chloroform, ether, benzene, and the essential and fatty oils. The dose of cannabinone is set down as from ½ to 1 grain (0.03 to 0.06 gramme); its taste, which is said to be quite disagreeable, may be disguised by powdered coffee.

form, ether, and the fatty oils. It is slightly soluble in alcohol, but is insoluble in water.

Therapeutic Applications.—The drug has of late been applied in the treatment of tuberculosis, hypodermatically injected; but the value of the remedy has not yet been accurately ascertained. The results, so far obtained, have not been very encouraging.

Administration.—The dose of cantharidin has not been determined as yet.

CARBON BISULPHIDE.

This substance, which has a formula of CS_2, also known as *Carbon disulphide*, is an agent brought of late into medicinal use.

Physical Properties.—*Carbon bisulphide* is a colorless, inflammable, highly refractive liquid, with a strong characteristic odor and aromatic taste.

Therapeutic Applications.—The drug has been recommended as a local anæsthetic in the treatment of neuralgias and enlarged lymphatic glands.

Administration.—Carbon bisulphide is applied locally.

CARBON TETRACHLORIDE.

Therapeutic Applications.—*Carbon tetrachloride* has anæsthetic properties similar to those of the bisulphide. It is also used as an emmenagogue in dysmenorrhœa, and in hay-fever.

Administration.—The drug is best employed by inhalation.

CARPAINE.

Carpaine is the alkaloidal active principle recently obtained from the *Caricaya papaya*, or melon-tree. The chemical formula of the alkaloid is $C_{14}H_{27}NO_2$.

Physical Properties.—Carpaine occurs in beautiful crystals having a bitter taste. Its melting-point is 239° F. (115° C.). It forms salts with the mineral acids, the principal one being the hydrochlorate.

Solubility.—The salt is freely soluble in water.

Therapeutic Applications.—Carpaine has been considered as the only substitute for digitalis, having advantageously been employed in the treatment of cardiac affections, particularly in mitral insufficiency and aortic stenosis. The drug acts also as a respiratory stimulant and diuretic.

Administration.—Carpaine is best given hypodermatically in doses of from $\frac{1}{10}$ to $\frac{1}{6}$ of a grain (0.006 to 0.01 gramme) daily or every other day. It may also be employed by the mouth in daily amounts of $\frac{3}{8}$ of a grain (0.025 gramme), but it is said not to be so effective given in this manner.

CARVACROL.

This substance, said to be a phenol, is contained in the essential oil of *Origanum species*. The chemical composition of *Carvacrol* is $C_{12}H_{14}O$.

Physical Properties.—*Carvacrol* occurs as a thick oily body, with a melting-point of 451.4° to 455° F. (233° to 235° C.). The *iodide of carvacrol* is a yellowish-brown powder.

Solubility.—The salt is freely soluble in chloroform, ether, and olive oil; it is insoluble in water.

Therapeutic Applications.—Carvacrol has only been used locally as an antiseptic in diseases of the skin, and in the treatment of wounds and ulcers as a substitute for iodoform.

Administration.—The drug has been employed in the form of powder, ointment, or as gauze.

CATHARTINIC ACID.

The *Cassia species* yields an active principle known under the name of *cathartinic acid.*

Physical Properties.—The drug occurs in brown, hygroscopic scales.

Solubility.—Cathartinic acid is readily dissolved by water and alcohol.

Therapeutic Applications.—The remedy, apparently destitute of poisonous properties, is employed simply as a laxative.

Administration.—Cathartinic acid may be administered in doses of from 4 to 6 grains (0.26 to 0.56 gramme).

CASCARA SAGRADA.

Cascara sagrada (sacred bark) is the Spanish name given to the bark of the *Rhamnus purshiana.* No active principle has been isolated.

Therapeutic Applications.—Cascara is most valuable as a tonic and laxative, especially in the treatment of habitual constipation.

Administration.—The dose of the *fluid extract,* best given after meals, is from 10 to 15 minims (0.6 to 0.9 gramme).

CELASTRINE.

This alkaloid has been extracted from the *Celastrus edulis.*

Therapeutic Applications.—Although not yet sufficiently tried, *Celastrine* has been found to possess properties similar to those of cocaine.

CETRARINE.

Cetrarine is the principle obtained from the common Iceland moss or lichen, *Cetraria islandica*, having a formula of $C_{18}H_{16}O_8$.

Physical Properties.—Cetrarine occurs in white, crystalline acicular needles, of a bitter taste.

Solubility.—The drug is freely soluble in boiling alcohol.

Therapeutic Properties.—Cetrarine is stomachic, and has been successfully employed in disturbances of digestion. It is similarly valuable in anæmia and chlorosis.

Administration.—The remedy is best given in pill-form, in doses of from 3 to 6 grains (0.2 to 0.4 gramme).

CHLORALAMIDE.

This drug is similarly termed *Chloral-formamide*, and is obtained from the interaction of formamide and chloral. Its formula is given as $CC_3CH\begin{matrix}OH\\ \diagdown\\ \diagup\\ HNCHO.\end{matrix}$

Physical Properties.—*Chloralamide* is a crystalline and slightly bitter substance, with a melting-point of 239° F. (115° C.).

Solubility.—The drug is soluble in alcohol and in water in the proportion of 1 to 9 parts.

Therapeutic Applications. — Chloralamide is used chiefly as a hypnotic, and in this respect it is considered safer and superior to chloral, especially in the sleeplessness occurring in cardiac affections.

Administration.—The drug is best given in slightly warm water, in doses of from 30 to 50 grains (2 to 3.5 grammes).

CHINOLINE.

Chinoline, also termed *Quinoline*, is obtained from cinchonine or quinine by distillation; but it has also been synthetically prepared. Its chemical composition is represented by this formula: C_9H_7N.

Physical Properties.—When pure, chinoline is a colorless liquid, with a characteristic, aromatic, pungent odor. It melts at 458.6° F. (237° C.); and its sp. gr. is 1.084 at 138° F. (59° C.).

Solubility.—Chinoline is freely soluble in alcohol, ether, chloroform, and hot water; it is insoluble or only slightly soluble in cold water.

Therapeutic Applications.—The drug has been mainly used as an antiseptic and antizymotic. It has some antipyretic properties. The remedy has rendered good service in the treatment of diseases of the pharynx.[1]

Administration.—The internal dose of chinoline is from 3 to 10 minims (0.2 to 0.6 gramme); of the *tartrate*, 5 to 15 grains (0.3 to 1 gramme). For local use, it may be applied in solutions of the strength of 10 per cent., made with rectified spirit or peppermint-water.

CHLORAL AMMONIUM.

This substance is *Trichlor-amido-ethylic alcohol*, with a formula of CCl_3,CH,OH,NH_2.

Physical Properties.—The drug occurs as a white, crystalline powder, having a melting-point of 147° F. (64° C.).

[1] Many salts of chinoline have been recommended therapeutically, the principal one being the *tartrate*, which is soluble in cold water in the proportion of 1 to 70 or 80 parts. The tartrate is alleged to have done good in whooping-cough in doses of 1½ grains (0.09 gramme), every 3 hours; and in malarial fever in doses of 15 grains (1 gramme) in divided amounts, three hours before the expected paroxysms.

Solubility.—*Chloral ammonium* is soluble in alcohol, and slightly so in water.

Therapeutic Applications.—The remedy is used chiefly as an analgesic and hypnotic in a variety of disorders characterized by wakeful nervous insomnias.

Administration.—The dose of chloral ammonium is from 15 to 30 grains (1 to 2 grammes).

CHLORPHENOL.

This substance is the *Monochlorphenol*, represented by the formula of $C_6H_4Cl.OH$.

Physical Properties.—The drug occurs as a volatile liquid, heavier than air.

Therapeutic Applications.—*Chlorphenol* possesses antiseptic and antituberculotic properties. It has rendered marked service in the treatment of tubercular diseases. The remedy has likewise been employed successfully against bronchitis, laryngitis, and ozæna. Locally applied, it has done good in the treatment of discharging glands, ulcers, and wounds.

Administration.—Monochlorphenol is usually administered by inhalations; but, as stated, it is also employed as a local application.

CHROMIC ACID.

Chromic acid or, better, chromic anhydride is obtained from potassium bichromate by the action of sulphuric acid. Its formula is CrO_3.

Physical Properties.—The drug appears in long, hygroscopic, red rhombic prisms or needles.

Solubility.—Chromic acid is readily dissolved by water.

Therapeutic Applications.—The medicament is only employed externally as a powerful caustic in the treatment

of tumors, hypertrophied tonsils, excrescences, syphilitic ulcers, etc. It is similarly used in tenderness and hypersecretion of the feet; as a hæmostatic, in gonorrhœa, and in ozæna.

Administration.—The solutions of chromic acid should be of the strength varying from 1 to 5 per cent. For ozæna and gonorrhœa, aqueous solutions of the drug can be made of the strength of 1 to 1000.

CHRYSAROBIN.

Chrysarobin is obtained from the wood of the tree *Andira araroba*. Its chemical composition is $C_{30}H_{26}O_7$.

Physical Properties.—The drug occurs as a yellowish, crystalline, tasteless powder.

Solubility.—Chrysarobin is soluble in alcohol, benzene, chloroform, ether, and in alkaline and acid solutions; somewhat soluble in water in the proportion of 1 to 200 parts.

Therapeutic Applications.—The remedy is serviceable in the treatment of parasitic diseases of the skin, especially in psoriasis.

Administration.—Internally the dose of chrysarobin varies from $\frac{1}{8}$ to $\frac{1}{4}$ of a grain (0.008 to 0.015 gramme). Externally it is applied in the form of ointment of a 10 per cent. strength.

CINERARIA.

This plant, the *Cineraria maritima*, has not been analyzed as yet, but is said to possess medicinal virtues of value.

Therapeutic Applications.—The fresh leaves of the plant furnish a juice which is claimed to be beneficial in the treatment of cataract without operation.

Administration.—The juice is simply dropped into the eye, in doses of 2 minims (0.15 gramme) 3 times a day.

COCAINE PHENATE.

This new combination of cocaine contains about 75 per cent. of the alkaloid.

Physical Properties.—*Cocaine phenate* occurs as a viscid, yellowish mass.

Solubility.—The new medicament is soluble in alcohol, but insoluble in water.

Therapeutic Applications.—The drug is employed as a local anæsthetic in catarrhal affections of the nose and stomach, and in other disorders.

Administration.—Cocaine phenate may be given internally, in capsules, in doses of from $\frac{1}{12}$ to $\frac{1}{6}$ of a grain (0.005 to 0.01 gramme). It may also be used by insufflation. For local application the strength of the solutions may vary from 5 to 10 per cent.

CODEINE PHOSPHATE.

This salt is represented by the formula of $C_{18}H_{21}NO_3$-H_3PO_3, $1\frac{1}{2}$ Aq.

Physical Properties.—The salt appears in white needles, of a bitter taste.

Solubility.—*Codeine phosphate* is soluble in water and slightly so in alcohol.

Therapeutic Applications.—This new remedy has been used in the treatment of mental disorders. It is alleged also to be of service in morphinism.

Administration.—The dose of the drug is given as from $1\frac{1}{2}$ to 2 grains (0.09 to 0.12 gramme).

COLCHICEINE.

By a process of hydrolysis *Colchicine* yields a substance which has been termed *Colchiceine*, having a chemical composition of $C_{21}H_{22}(OH)NO_5$.

Solubility.—Colchiceine is readily soluble in boiling water, alcohol, and chloroform; slightly so in cold water.

Therapeutic Applications.—The drug has been employed in acute rheumatism and gout.

Administration.—Colchiceine is best given hypodermatically in doses of from $\frac{1}{60}$ to $\frac{1}{30}$ of a grain (0.001 to 0.002 gramme).

COLCHICINE.

Colchicine is the active principle of the common meadow saffron, or *Colchicum autumnale*, its formula being $C_{21}H_{22}(OCH_3)NO_5$.

Physical Properties.—The drug occurs as an amorphous body, with a melting-point of from 289.4° to 296.6° F. (143° to 147° C.).

Solubility.—Colchicine is readily soluble in water, alcohol, and chloroform.

Therapeutic Applications.—This remedy, like colchiceine, has been employed in the treatment of rheumatism and gout. It is also recommended in sciatica.

Administration.—The dose of colchicine varies from $\frac{1}{120}$ to $\frac{1}{20}$ of a grain (0.0005 to 0.003 gramme).

CONESSINE.

From the bark of two plants, the *Holarrhena africana* and the *H. antidysenterica*, an alkaloid termed *Conessine* has been extracted, the chemical composition of which is put down as $C_{20}H_{40}N_2$.

Physical Properties.—*Conessine* appears as a crystalline acicular substance, with a melting-point of 249.8° F. (121° C.).

Solubility.—Conessine is freely soluble in alcohol, chloroform, and ether. Water dissolves it with difficulty.

Therapeutic Applications.—The drug appears to be of service in the treatment of diarrhœa and dysentery, but its therapeutic value in these disorders and its proper dose have not been ascertained with accuracy.

CONDURANGO.

The bark of *Gonobolus condurango*, said to contain a glucoside and other active principles.

Therapeutic Applications.—Condurango is mostly used as an alterative in syphilis and cancer. It is also effective as a stomachic tonic.

Administration.—The only preparation used at present is the *fluid extract*, the dose of which is from 20 to 30 minims (1.2 to 2 grammes).

CONIINE HYDROBROMATE.

The salt, also called *conicine* and *ciculine*, is represented by the formula of $C_8H_{17}N$, HBr.

Physical Properties.—This body occurs in transparent, colorless prisms.

Solubility.—The salt is soluble in water and alcohol in the proportion of 1 to 2 parts; it is slightly soluble in ether.

Therapeutic Applications.—*Coniine hydrobromate* has rendered good service as an antispasmodic and antineuralgic in the treatment of whooping-cough, tetanus, and sciatica.

Administration.—For adults the dose of coniine hydrobromate is $\frac{1}{30}$ to $\frac{1}{15}$ of a grain (0.002 to 0.004 gramme). For children, $\frac{1}{600}$ to $\frac{1}{60}$ of a grain (0.0001 to 0.001 gramme).

CONVALLAMARIN.

The glucoside of the *Convallaria majalis*, commonly called lily of the valley. The chemical nature of the principle is represented by this formula: $C_{23}H_{44}O_{12}$.

Physical Properties.—*Convallamarin* appears in the form of a whitish-brown amorphous powder.

Solubility.—The drug is soluble in water and alcohol.

Therapeutic Applications.—The chief uses of convallamarin are those of a cardiac stimulant. The remedy is of especial benefit in mitral stenosis with failing heart's action.

Administration.—The dose of convallamarin is from ½ to 1 or 2 grains (0.03 to 0.06 or 0.12 gramme).

CONVALLARIN.

This is another active principle of *Convallaria majalis*.

Physical Properties.—*Convallarin* occurs as a crystalline body.

Solubility.—The drug is soluble in alcohol; insoluble in water.

Therapeutic Applications.—Convallarin has been used purely for its purgative effects.

Administration.—The remedy is given in doses of from 2 to 4 grains (0.12 to 0.24 gramme).

CONVOLVULIN.

From several plants of the genus *Ipomœa*, but especially from the *I. purga*, *Convolvulin*, a glucoside, is obtained. Its chemical formula is $C_{31}H_{50}O_{16}$.

Physical Properties.—Convolvulin occurs as an amorphous mass.

Solubility.—The glucoside is readily soluble in alcohol and acetic acid. It is insoluble in water.

Therapeutic Applications.—Although the drug possesses errhine properties, it has been chiefly employed as an effective purgative.

Administration.—The dose of convolvulin is 1½ to 3 grains (0.09 to 0.18 gramme).

CORNUTINE.

This body is considered the most active constituent of ergot, *Secale cornutum*. No chemical analysis of the drug has been made.

Physical Properties.—*Cornutine* appears as a brownish-gray amorphous powder. It is said to be an alkaloid.

Solubility.—The alkaloidal remedy is scarcely soluble in water, but its salts, more especially the *Citrate* and the *Hydrochlorate*, are dissolved by the vehicle mentioned.

Therapeutic Applications.—The drug is asserted to be of advantage, particularly in hemorrhages from the genito-urinary organs of both males and females.

Administration.—Cornutine may be given in daily doses of from $\frac{1}{6}$ to $\frac{1}{4}$ of a grain (0.01 to 0.015 gramme).

COTOIN.

To a neutral principle obtained from the bark of a species of *Nectandra*, the name of *Cotoin* is given. The chemical composition of this is as follows: $C_{22}H_{18}O_6$.

Physical Properties.—The new agent occurs as an amorphous crystalline powder, of a pale yellowish color.

Solubility.—Cotoin is readily soluble in ether, alcohol, chloroform, and the alkalies; it is only slightly soluble in water.

Therapeutic Applications.—The only marked value attributed to cotoin is as an anti-choleric, and as such it is said to exercise a specific action upon the intestinal

mucous membrane. The remedy is alleged also to check the night-sweats of phthisis.

Administration.—Cotoin is best given in acetic ether, in which it may be dissolved in the proportion of 1 to 4 parts. Its dose varies from ½ to 2 grains (0.03 to 0.12 gramme).

CORONILLA.

Of the two closely allied species of this plant, the *Coronilla scorpioides* and the *C. varia*, the latter has been found to be the more useful. No principles have been extracted as yet.

Therapeutic Applications.—This drug is employed as a heart tonic, especially in cases where digitalis has failed to be of any service. It is likewise asserted that the drug possesses cathartic and diuretic properties.

Administration.—Two preparations of coronilla are now in use: A *tincture* of the entire plant, of the strength of 1 to 5, the daily dose of it being from ½ to 1 fluid drachm (2 to 4 grammes); and a *powder* made from the flowers, which is given in quantities of from 15 to 30 grains (1 to 2 grammes), a day.

CREOLIN.

A form of cresol, *Creolin* is obtained from coal-tar.

Physical Properties.—This body appears as a black alkaline fluid of the consistency of syrup, its sp. gr. being from 1040 to 1080. It has a characteristic odor.

Solubility.—Creolin is soluble in alcohol, ether, and chloroform; insoluble in wood-spirit. With water it makes a milky mixture.

Therapeutic Applications.—The remedy is highly valuable as a general antiseptic and sedative. It is of especial

benefit in cystitis and other diseases of the genito-urinary tract. It has done good service in intestinal disorders, and has been used, with asserted success, against phthisis, internally administered. Diseases of the eye and ear have similarly received benefit from the drug.

Administration.—When given internally, and this is best done in capsules, the dose is from 1 to 5 minims (0.06 to 0.3 gramme). For local application, solutions of the strength of from 1 to 2 per cent. may be used.

CYTISINE.

Various species of *Cytisus*, especially the *C. laburnum*, yield an alkaloid known under the name of *Cytisine*, whose chemical composition is as follows: $C_{11}H_{14}N_2O$.

Physical Properties.—The alkaloid itself occurs in whitish-yellow, deliquescent crystals. The *nitrate* of the drug is the preparation generally employed for therapeutic purposes. It is of a pale color and of an acid reaction.

Therapeutic Applications.—The salt, hypodermatically administered, has been employed in the treatment of paralytic migraine. The drug is also said to do good as a diuretic in dropsies of cardiac origin.

Administration.—The dose of *cytisine nitrate*, subcutaneously ingested, varies from $\frac{1}{20}$ to $\frac{1}{12}$ of a grain (0.003 to 0.005 gramme).

DATURINE.

The alkaloid obtained from the seeds and leaves of the common Jamestown Weed, *Datura stramonium*. It is claimed to be identical with hyoscyamine, and its chemical composition is as follows: $C_{17}H_{23}NO_3$.

Physical Properties.—The *sulphate of daturine* appears in white granular crystals.

Therapeutic Applications.—*Daturine sulphate* is employed therapeutically as a hypnotic in maniacal subjects.

Administration.—The medicament may be given in doses of from $\frac{1}{120}$ to $\frac{1}{80}$ of a grain (0.00054 to 0.00081 gramme).

DERMATOL.

This term is applied to the *Subgallate of bismuth*, which contains 55 per cent. of the oxide of bismuth, and is represented by the formula of $BiC_7H_7O_7$.

Physical Properties.—*Dermatol* is an odorless, non-hygroscopic, yellow, saffron-like powder.

Solubility.—The drug is insoluble in the ordinary solvents.

Therapeutic Applications.—Dermatol is at present largely used as an antiseptic, in place of iodoform, in all those affections in which the latter remedy is indicated. The bismuth subgallate is also of service internally in diseases of the gastro-intestinal tract, as a substitute for the subnitrate salt.

Administration.—The daily dose when given by the mouth is 30 grains (2 grammes). Locally it may be applied as a dusting-powder, gauze, glycerine, or collodion emulsion, or ointment of the strength of from 10 to 20 per cent.

DIAPHTHERIN.

This substance, also called *Oxychinaseptol*, has quite recently been introduced as an excellent antiseptic (a solution of the powder in the strength of $\frac{1}{10}$ per cent. is said to kill the bacillus of cholera in 10 minutes); but its medicinal uses have not been very extensive as yet, although it has been tried with apparent success in the

treatment of wounds, sores, and putrefactive disorders. The new agent occurs as a white powder, and its chemical composition is given as $(OH.C_9H_6N)_2$ (OH) (SO_3H) C_6H_4.

DIGITALIN.[1]

Digitalin is supposed to be one of the four or five glucosides (?) existing in the common foxglove or *Digitalis purpurea*. Its true chemical nature has not been determined.

Physical Properties.—Digitalin occurs as an amorphous crystalline powder.

Therapeutic Applications.—The remedy is employed in those cardiac diseases in which digitalis itself is indicated.

Administration.—The dose of digitalin is from $\frac{1}{100}$ to $\frac{1}{50}$ of a grain (0.0006 to 0.0013 gramme).

DISINFECTOL.

This is a mixture of hydrocarbons, soaps, carbolic acid, and soda.

Physical Properties.—*Disinfectol* occurs as a brownish-black, oily liquid, analogous to creolin and lysol. It has an alkaline reaction and a sp. gr. of 1.086.

Therapeutic Applications.—The remedy is claimed to possess energetic disinfectant properties, but it has had no very extensive use.

[1] Two other glucosidal principles have been described of late: *Digitalein* and *Digitoxin*. Digitalein, whose formula is $C_5H_8O_2$, occurs as a yellowish amorphous powder, freely soluble in water and alcohol. Digitoxin is said to have a composition of $C_{21}H_2O_7$, and is a white, crystalline body, of a bitter taste, readily soluble in chloroform, but insoluble in water. The dose of this principle is put down as from $\frac{1}{200}$ to $\frac{1}{100}$ of a grain (0.0003 to 0.0006 gramme), twice a day.

Administration.—Disinfectol has been employed locally in the form of emulsion of a strength of from 2 to 5 per cent.

DIURETIN.

The *Sodio-salicylate of theobromine*, or the *Salicylate of theobromine and sodium*, is designated by the name of *Diuretin*. The combination is supposed to contain 49.7 per cent. of theobromine and 38.1 per cent. of salicylic acid, represented by the formula of $C_7H_7N_4O_2Na$, C_6H_4OHCO-ONa.

Physical Properties.—The salt appears as a white powder.

Solubility.—The compound is soluble in hot water and warm alcohol; but is insoluble in chloroform and ether.

Therapeutic Applications.—Diuretin is employed extensively as a diuretic, especially in dropsies of cardiac origin.

Administration.—The drug is best given in pill-form, but may likewise be administered in powder dissolved in peppermint-water. The dose is 15 grains (1 gramme), five or six times a day.

DUBOISINE.

The alkaloid yielded by the *Duboisia myoporoides*. It is obtained from the leaves of the plant, and is represented by this formula: $C_{17}H_{23}NO_3$.

Therapeutic Applications.—The *sulphate of duboisine*, the salt generally used in practical medicine, has of late been employed not only as a mydriatic in place of atropine, but also, and with asserted success, as a sedative and hypnotic in a variety of nervous disorders.

Administration.—The dose of the salt varies from $\frac{1}{120}$ to $\frac{1}{60}$ of a grain (0.00054 to 0.001 gramme), but it may

be given in as high amounts as $\frac{1}{30}$ of a grain (0.002 gramme).

ELDER.

This plant is the *Sambucus nigra*, whose chemical nature has not been fully examined.

Therapeutic Applications.—The drug is a valuable diuretic. It has been successfully tried in ascites and anasarca, especially of cardiac and renal origin.

Administration.—Elder is best given in the form of decoction.

EPHEDRINE.

An alkaloidal principle obtained from the leaves of the *Ephedra vulgaris.*

Physical Properties.—The alkaloid occurs in colorless crystals, and the *hydrochlorate* in colorless needles.

Solubility.—The salt is soluble in water.

Therapeutic Applications.—*Ephedrine hydrochlorate* is now solely used as a mydriatic in place of atropine.

Administration.—The salt is applied from solutions of the strength varying from 1 to 10 per cent.

ESERIDINE.

This alkaloid is extracted from the seeds of the common Calabar bean or *Physostigma venenosum.* It must not be confounded with *eserine* or *physostigmine,* which also occurs in the same plant. *Eseridine* has this formula: $C_{15}H_{23}N_3O_3$.

Physical Properties.—The melting-point of eseridine is 269.6° F. (132° C.), thus differing from its sister alkaloid, eserine, which melts at 194° F. (90° C.).

Solubility.—The alkaloid *eseridine* dissolves in ether with difficulty.

Therapeutic Applications.—The drug has been recommended so far only in veterinary therapeutics as a purgative for herbivorous animals.

ETHIDENE DICHLORIDE.

Also termed *Monochlorethyl chloride.*

Therapeutic Applications.—This drug is now used occasionally as an anæsthetic, but it has not been thoroughly studied.

ETHYL BROMIDE.

Bromide of ethyl is also known under various other names, such as *Aetherbromatus, Brom-ethyl, Hydrobromic ether*, and *Monobromethane.* Its formula is C_2H_5Br.

Physical Properties.—*Ethyl bromide* is a colorless, inflammable liquid, with a burning taste and a sweet odor resembling that of chloroform. When pure it boils at from 100.4° to 102.2° F. (38° to 39° C.), and its sp. gr. at 59° F. (15° C.) varies from 1.419 to 1.420.

Solubility.—*Bromide of ethyl* is readily soluble in alcohol, ether, and chloroform; but is insoluble in water.

Therapeutic Applications.—The drug is employed as an anæsthetic for cases of minor surgery. The anæsthesia produced by it is prompt, being effected in the course of from one-half to one minute.

Administration.—The dose is from 3 to 6 drachms (11.25 to 22.50 grammes), administered by inhalation.

ETHYL CHLORIDE.

This new anæsthetic is said to be prepared by the action of hydrochloric acid upon alcohol. It is represented by the formula of C_2H_5Cl.

Physical Properties.—The drug occurs as a colorless, inflammable, volatile liquid, of a not unpleasant odor. It boils between 50° and 53° F. (10° to 12° C.), and burns with a green flame.

Therapeutic Applications.—At present the remedy is employed only as a local anæsthetic for minor surgical operations.

Administration.—It is administered in the form of a spray.

ETHYL IODIDE.

This body, which is a hydriodic ether, may be represented by the following formula: C_2H_5I.

Solubility.—The *iodide of ethyl* is soluble in alcohol and ether; slightly so in water.

Therapeutic Applications.—The drug has recently been found to be effective in the treatment of asthma and laryngitis.

Administration.—*Ethyl iodide* can best be administered by inhalations.

ETHYLENE BROMIDE.

This substance is also named *Dibromethane*, being chemically constituted as follows: $C_4H_2Br_2$.

Physical Properties.—*Ethylene bromide* occurs as a brownish emulsifiable liquid, with an odor resembling that of chloroform, and a sweetish taste. Its sp. gr. is 2.163 at 69.8° F. (21° C.). It solidifies at 32° F. (0° C.), and its boiling-point is 299.8° F. (131° C.).

Solubility.—The drug is soluble in alcohol, but insoluble in water.

Therapeutic Applications.—Ethylene bromide, unlike the ethyl bromide, with which it must *not* be confounded,

is not used as an anæsthetic. The ethylene compound is said to be of value in the treatment of epilepsy, and is employed as such in place of the potassium salt.

Administration.—The remedy is best given in emulsion or capsules in doses of from 6 to 12 drops or minims (0.18 to 0.74 gramme), three times a day. For a child ten years of age, about 10 drops (0.60 gramme) twice a day, increasing cautiously. The remedy may be given hypodermatically.

EUCALYPTOL.

This substance is obtained from the essential oil of several plants of the Eucalyptus genus, and also from others. The formula given for eucalyptol is $C_{10}H_{18}O$.

Physical Properties.—This body, when pure, occurs as a colorless liquid, with an odor resembling that of camphor. It boils at from 348.8° to 350.6° F. (176° to 177° C.), and its sp. gr. is 0.930. It crystallizes at 30.2° F. (—1° C.).

Solubility.—Eucalyptol is soluble in alcohol, ether, chloroform, and the fatty oils; it is insoluble in water.

Therapeutic Applications.—The drug possesses marked therapeutic properties, but is chiefly employed externally as an antiseptic in ulcers and as a stimulant in neuralgia and rheumatism. Internally it has been of advantage in diseases of the respiratory tract, such as pneumonia, pulmonary gangrene, and tuberculosis. It has done good in malaria, affections of the urinary tract, and influenza.

Administration.—Eucalyptol is best given in capsules, or in emulsion internally, or hypodermatically in oil, in doses of 5 minims (0.30 gramme).

EUCALYPTUS ROSTRATA.

This plant occurs upon the market in the form of *red gum.*

Therapeutic Applications.—The drug is highly recommended in the treatment of sea-sickness.

Administration.—The medicament is best administered in lozenges, in doses of 1 grain (0.06 gramme), three or four times a day.

EUGENOL.

This body, a phenol, which is yielded by the oil of cloves through oxidation, may also be obtained from other essential oils, such as that of cinnamon, bay, pimento, and sassafras. *Eugenol* is also termed *Eugenic acid,* and is thus chemically constituted: $C_6H_3.\ C_3H_5\ (OH)\ (OCH_3)$.

Physical Properties.—Eugenol occurs as an aromatic liquid, with a boiling-point of 455° F. (235° C.).

Solubility.—The drug is freely soluble in alcohol, but slightly so in water.

Therapeutic Applications.—Although recommended as a febrifuge, the remedy is at present mainly employed as an antiseptic;[1] as such it has rendered good service, being considered in many instances superior to carbolic acid.

Administration.—The daily dose of *eugenol,* which can be best administered in alcoholic solutions, is 45 minims (2.80 grammes).

[1] Besides the *Benzoyl-eugenol,* q. v., another derivative of Eugenol is the *Cinnamyl-eugenol,* with a formula of $C_6H_3.C_3H_5(OCH_3)CO_2(CH)_2$-$C_6H_5$, and occurs in colorless crystals, odorless and tasteless, having a boiling-point of 194° to 198.5° F. (90° to 91° C.). *Cinnamyl-eugenol,* like its co-derivative, is soluble in hot alcohol, ether, chloroform, and acetone. The drug is being used in the treatment of tubercular diseases.

EUONYMIN.

This drug is obtained from the bark and root of the *Euonymus atropurpureus;* its chemical constitution has not been definitely made out.

Physical Properties.—*Euonymin* is a brown or greenish-brown resinous powder, having a slightly bitter taste.

Solubility.—The drug is soluble in water, but scarcely so in alcohol and ether.

Therapeutic Applications.—Euonymin is of service as a laxative in constipation of hepatic origin, due especially to a torpid organ.

Administration.—The dose of euonymin is from ½ to 3 grains (0.03 to 0.18 gramme).

EUPHORBIA PILULIFERA.

Therapeutic Applications.—This plant has recently been found of value in the treatment of coryza and hay-asthma.

Administration.—The preparation used is the fluid extract, the dose of which is given as from 30 to 60 minims (2 to 4 grammes).

EUPHORIN.

This body is the *Carbonate of ethyl and phenyl, Phenyl-ethylic urethane,* or simply *Phenyl-urethane,* having a formula of $CO\begin{matrix}O,C_2H_5\\NH,\ C_6H_5\end{matrix}$ or $C_6H_5NHCOOC_2H_5$.

Physical Properties.—*Euphorin* occurs as a white powder, of a slight aromatic odor and a taste resembling that of cloves. Its melting-point is 123.8° F. (51° C.).

Solubility.—The drug is soluble in alcohol, but slightly so in water.

Therapeutic Applications.—Euphorin is recommended as a serviceable antipyretic, antirheumatic, anodyne, and antiseptic in all those affections requiring the actions of similar drugs. Thus it has been employed with asserted success in rheumatism, tuberculosis, venereal and other skin disorders, etc.

Administration.—Internally euphorin may be given in doses of from 7½ to 15 grains (0.5 to 1 gramme) twice or thrice a day. Locally it can be employed in the pure state, as a dusting-powder.

EUROPHEN.

Europhen, which must *not* be confounded with *europhin* (q. v.), is the *Iodo-di-iso-butyl-ortho-cresol*, or *Di-iso-butyl-ortho-cresol iodide*, said to contain 21.8 per cent. of iodine. It is chemically constituted as follows:—

$$2\left(\begin{matrix}C_4H_9\\CH_3\end{matrix}\right\}C_6H_3O)\,HI.$$

Physical Properties.—The drug occurs as an amorphous yellow powder, with an odor resembling that of saffron. It melts at 158° F. (70° C.), and liquefies at 230° F. (110° C.), the liquid appearing of a clear brown color.

Solubility.—*Europhen* is soluble in alcohol, ether, chloroform, and the oils, but is insoluble in water.

Therapeutic Applications.—The remedy is used in all those diseases for which iodoform is employed; over this latter substance europhen has some advantages. Hypodermatically administered, europhen is of service in the treatment of syphilitic disorders.

Administration.—The drug is applied as a dusting-powder, or in ointment of the strength of from 5 to 10 per

cent. For hypodermatic use solutions in olive oil, of from 3 to 10 per cent. strength, may be employed, the dose being from ¼ to 1½ grains (0.016 to 0.09 gramme).

EXALGINE.

This compound is the *Methyl-acetanilide*, a substance closely allied to acetanilide or antifebrin, and is obtained by the interaction of acetyl chloride and monomethylanilide. *Exalgine* is represented by this formula: C_6H_5-$N(CH_3)CH_3CO$.

Physical Properties.—*Methylacetanilide* occurs as a tasteless powder made up of crystalline, acicular needles, with a melting-point of 212° F. (100° C.), and, without decomposing, it boils at from 464° to 482° F. (240° to 250° C.).

Solubility.—*Exalgine* is readily soluble in alcohol, and difficultly in water.

Therapeutic Applications.—The drug has been employed particularly as an analgesic and antiseptic. It is of service in a large class of neuralgias, in which it is found to be superior to antipyrine, and also in chorea.

Administration.—Exalgine is best administered in *cachets* or capsules, or in weak alcoholic solutions. The dose may be put down as from ⅘ of a grain to 2 or even 5 grains (0.05 to 0.12 or 0.6 gramme).

FLUORESCEINE.[1]

This body is a derivative of resorcin, and is likewise named *Resorcin-phtalein*. Its chemical nature is as follows: $C_{20}H_{12}O_5$.

[1] *Fluorescin* is another body closely allied to fluoresceine, and used for the same purposes.

Physical Properties.—The drug is a dark-brown, crystalline substance. It forms with ammonia a red solution which gives a most beautiful green fluorescence.

Therapeutic Applications.—*Fluoresceine* is highly recommended chiefly for the detection of lesions of the cornea, especially in cases in which there is much photophobia. It has also been found of value in determining whether strictures of the nasal duct are impervious. The drug is used in solutions of the strength of 10 grains to the ounce (0.65 in 30 grammes), adding to this about 1½ times as much of bicarbonate of sodium.

FUSCHSINE.

The *Monohydrochlorate of rosaniline* is known under the names of *Fuschsine* and *Roseine.*

Therapeutic Applications.—This substance, soluble in water, is said to be a valuable remedy in albuminuria. Care must be exercised in its use, as it is liable to contain arsenic.

Administration.—Fuschsine is best given in pill-form with glycerin or tragacanth, in doses of from ½ to 4 grains (0.3 to 0.25 gramme).

GALEGA.

Therapeutic Applications.—Although not as yet thoroughly studied chemically or physiologically, this plant has been found to possess highly valuable galactagogue properties. These virtues have been put to practical use with excellent results. An aqueous extract is the preparation employed in doses of from 7½ to 15 grains (0.5 to 1 gramme). As high a quantity as 60 grains (4 grammes) has been administered in the course of a day.

GALLACETOPHENONE.

This body, originally known as *Gallacotophenone*, is a derivative of pyrogallol, with a formula of $CH_3CO,C_6H_2(OH)_3$.

Physical Properties.—The drug is a yellowish, crystallizable powder, with a melting-point of 158° F. (70° C.).

Solubility.—*Gallacetophenone* is soluble in hot water, alcohol, ether, and glycerine.

Therapeutic Applications.—The remedy is chiefly employed as a substitute for pyrogallol in diseases of the skin, especially psoriasis.

Administration.—Gallacetophenone is applied locally in 10 per cent. solutions.

GELSEMINE.

An alkaloid extracted from the rhizome of two species of the yellow jasmine, the *Gelsemium sempervirens* and the *G. nitidum*. Its formula is $C_{54}H_{69}N_4O_{12}$.

Physical Properties.—*Gelsemine* occurs as a solid, transparent, crystallizable mass. It is turned into a colorless liquid at 113° F. (45° C.).

Solubility.—The alkaloid is extremely insoluble in cold, but to a certain extent soluble in hot water, from which it separates in an amorphous mass.

Therapeutic Applications.—The drug is useful as an antispasmodic and analgesic in the treatment of convulsive coughs and neuralgias.

Administration.—The dose of gelsemine varies from $\frac{1}{60}$ to $\frac{1}{20}$ of a grain (0.001 to 0.003 gramme).

GLUTIN-PEPTONE SUBLIMATE.

This is a hydrochlorated *glutino-peptonate of mercury*, containing 25 per cent. of corrosive sublimate. It is obtained by the action of hydrochloric acid on gelatine.

Physical Properties.—The compound is a white, hygroscopic powder, but generally occurs as a colorless, non-corrosive liquid.

Therapeutic Applications.—The remedy is chiefly employed as an antisyphilitic.

Administration.—The *glutin-peptone sublimate* is best administered hypodermatically (it does not produce much pain or form abscesses) in doses of 15 grains (1 gramme).

GUAIACOL.

Guaiacol is also designated by the name of *Methylpyrocatechin.* It is obtained from beechwood tar creasote, and it is said to contain from 60 to 90 per cent. of creasote. Its formula is $C_6H_4OHOCH_3$.

Physical Properties.—The drug occurs as a liquid substance, having a pleasant odor. It boils at from 402.8° to 404.6° F. (206° to 207° C.), and its sp. gr. at 59° F. (15° C.) is 1.133.

Solubility.—*Guaiacol* is soluble in water in the proportion of 1 to 85, and in petroleum benzin in that of 1 to 8.

Therapeutic Applications.—At present guaiacol is extensively used in the treatment of tuberculosis, especially during the early stages of the disease, as an advantageous substitute for creasote.

Administration.—The medicament is best given after meals in alcoholic solutions, mixed with cod-liver oil, or in capsules, in doses of from 5 to 10 minims (0.30 to 0.60 gramme). It may also be administered in the same *amounts* by inhalation or hypodermatically.

GUAIACOL BIIODIDE.

Obtained from sodium-guaiacol by the action of iodine and iodide of potassium.

Physical Properties.—This body appears as a reddish-brown salt, with an odor resembling that of iodine.

Solubility.—The drug is soluble in alcohol and the fatty oils, but decomposes rapidly.

Therapeutic Applications.—The salt has the same uses as guaiacol itself, and is given in similar doses.

GUAIACOL CARBONATE.

This body has not been definitely determined from a chemical standpoint, although the formula of it is given as being made up of $CO(OC_6H_4OCH_3)_2$.

Physical Properties.—*Guaiacol carbonate* occurs as an odorless and tasteless neutral crystalline substance, with a melting-point of from 186.8° to 194° F. (86° to 90° C.).

Therapeutic Applications.—The *carbonate of guaiacol* has been mainly employed as a succedaneum for guaiacol and creasote in the treatment of pulmonary tuberculosis.

Administration.—The dose of the remedy is from 6 to 8 grains, and even as high as $1\frac{1}{2}$ drachms (0.46 to 0.52 or 5.8 grammes). It may be increased to 90 grains (6 grammes).

GUAIACOL SALICYLATE.

This new salt of guaiacol, or *guaiacolic salol*, is represented by this formula: $C_6H_4\begin{cases}COO,\ CH_4OCH_3\\OH.\end{cases}$

Physical Properties.—The *salicylate of guaiacol* occurs in white, odorless crystals, having a melting-point of 149° F. (65° C.).

Solubility.—The salt is soluble in alcohol, but is insoluble in water.

Therapeutic Applications.—*Guaiacol salicylate* is used for the same purpose and in the same quantities as salol.

GURGUN BALSAM.

Gurjun balsam or oil, or *wood-oil* as it is also termed, is an exudation obtained by incision from an East India tree. The chemical nature of the balsam has not been established.

Physical Properties.—The balsam is a transparent liquid of the consistency of olive oil, having a greenish-gray color and an odor resembling that of copaiba.

Therapeutic Applications.—*Gurjun oil* is employed especially as an alterative in the treatment of leprosy. It is said to be similarly serviceable in bronchitis and in gonorrhœa.

Administration.—The remedy is best given in emulsion, in combination with sweet spirit of nitre, in doses of from 1 to 2 drachms (3.75 to 7.50 grammes), three times a day.

GYNOCARDIC ACID.

From the oil of the seeds of the *Gynocardia odorata* an active principle, called *Gynocardic acid,* is extracted, represented by this formula: $C_{14}H_{24}O_2$.

Physical Properties.—Gynocardic acid occurs as a yellowish oily substance, with a melting-point of 86° F. (30° C.), having a distinct odor and an acrid taste.

Therapeutic Applications.—The drug is used, externally and internally, in the treatment of syphilis and leprosy, and even in rheumatic affections. In this respect it is said to be superior to chaulmoogra oil.

Administration.—Internally, the dose of gynocardic acid varies from ½ to 3 grains (0.03 to 0.18 gramme). Externally, it may be used in the form of liniment of the strength of 1 to 10 or 20 parts.

HAMAMELIS.

This plant, commonly called *witch-hazel*, is the *Hamamelis virginica*. Its chemical nature has not been thoroughly studied.

Therapeutic Applications.—The drug is a valuable hæmostatic, and has been successfully employed in the treatment of hæmatemesis, hæmoptysis, and hæmaturia. It has recently been found serviceable in hemorrhoids, locally applied.

Administration.—The preparation now used is the fluid extract, the dose of which is from 5 to 20 minims (0.3 to 1.2 gramme).

HÆMOGLOBIN.

This is the red coloring-principle of the solid elements of the blood.[1]

Therapeutic Applications.—This body has of late been tried with asserted success in the treatment of anæmia and chlorosis. It appears to influence rapidly the size, number, and quality of the blood-corpuscles, producing at the same time an increase in the appetite.

Administration.—*Hæmoglobin* is best given in wine or tablets, in daily doses of from 1½ to 3 grains (0.09 to 0.18 gramme).

[1] Chemical analysis of the *hæmoglobin* of the dog has shown that the principle is made up of the following: $C_{636}H_{1025}N_{164}FeS_3O_{181}$.

HELENIN.

This body is obtained from the root of the *Inula helenium.* It is represented by this formula: C_6H_8O.

Physical Properties.—*Helenin* occurs in colorless, crystalline needles, having a melting-point of 230° F. (110° C.).

Solubility.—The medicament is readily soluble in hot alcohol, ether, and the oils; scarcely soluble in water.

Therapeutic Applications.—The drug has been used as an antiseptic and antispasmodic in whooping-cough. It has similarly rendered good service in the treatment of the diarrhœa of phthisical patients. It has also given favorable results in the treatment of leucorrhœa accompanied with catarrhal endometritis.

Administration.—*Helenin* is administered alone or in combination with *inulin*, in doses of from $\frac{1}{6}$ to $\frac{1}{3}$ of a grain (0.01 to 0.02 gramme), in the course of 24 hours.

HELLEBOREIN.

This substance, a glucoside, is obtained from the rhizome of several species of the *Helleborus genus.* The chemical composition is thus formulated: $C_{26}H_{44}O_{15}$.

Physical Properties.—The glucoside appears as a crystalline body.

Solubility.—The drug is perfectly soluble in water.

Therapeutic Applications.—*Helleborein* has been chiefly employed as a substitute for digitalis. It also possesses anæsthetic properties said to be superior to cocaine.

Administration.—The dose of *helleborein* is from $\frac{1}{10}$ to $\frac{1}{4}$ of a grain (0.006 to 0.016 gramme).

HEMOL.

A compound obtained by the action of zinc-dust on the coloring-matter of the blood.

Physical Properties.—*Hemol* appears as a blackish-brown powder.

Therapeutic Applications.—The drug has been found to be useful as a hematinic, especially in the treatment of chlorosis.

Administration.—Hemol is given in doses of from 1½ to 7½ grains (0.1 to 0.5 gramme), three times a day, in the form of wafers or chocolate tablets.

HEMOGALLOL.

This compound is obtained by the action of pyrogallol on the coloring-matter of the blood.

Physical Properties.—The drug occurs as a beautiful reddish-brown powder.

Therapeutic Applications.—The uses and dose of *hemogallol* are the same as those of hemol.

HOMATROPINE.

This is a by-product occurring in the preparation of atropine; but it has also been synthetically prepared from *tropic acid* and *tropin*, two derivatives of the belladonna alkaloid. The composition of homatropine is as follows: $C_{16}H_{21}O_2$.

Physical Properties.—The drug occurs in white, crystalline prisms.

Solubility.—*Homatropine* is readily soluble in water.

Therapeutic Applications.—Although there are several salts of the drug, the one most commonly used is the *Hydrobromate*. It is employed in those diseases in which atro-

pine is indicated. Homatropine is also a mydriatic, and has similarly been found of service in the night-sweats of phthisis.

Administration.—The dose of *homatropine hydrobromate* is from $\frac{1}{120}$ to $\frac{1}{60}$ of a grain (0.0005 to 0.0010 gramme). For local applications to the eye, solutions of the strength of 4 grains to the ounce (0.25 in 30.00 grammes) may be employed.

HYDRACETINE.

This hydrazine compound, also commonly called *Pyrodine*, is the *Acetyl-phenyl hydrazine*, with a formula of $C_6H_5HN—NHCH_3CO$.

Physical Properties.—*Hydracetine* occurs as a colorless, odorless, and almost tasteless substance, made up of crystalline prisms. It boils at from 262.4° to 264.2° F. (128° to 129° C.).

Solubility.—Hydracetine is soluble in alcohol, and in water in the proportion of 1 to 50.

Therapeutic Applications.—The drug has been employed as an antipyretic, but its chief uses at present are confined to cutaneous disorders, especially psoriasis, in which it is resorted to in place of chrysarobin. As an antipyretic it must be given with extreme caution.

Administration.—Internally the dose varies from $\frac{1}{2}$ to 3 grains (0.03 to 0.18 gramme). For local applications an ointment of the strength of 10 per cent. may be employed.

HYDRASTINE.

One of the alkaloids of the common golden seal, or *Hydrastis canadensis*. The principle has the following chemical composition: $C_{21}H_{21}NO_6$.

Physical Properties.—The alkaloid is a white, crystalline body, made up of four-sided rhombic prisms. It also occurs in an amorphous form.

Solubility.—*Hydrastine* is soluble in alcohol, ether, and chloroform, but insoluble in water. The salts, such as the nitrate, the sulphate, the tartrate, and especially the *hydrochlorate*, are all soluble in water.

Therapeutic Applications.—Hydrastine is useful in a variety of disorders, as a stomachic and antiperiodic. It is of service also in diseases of the skin, in catarrhal jaundice, as a uterine tonic, in leucorrhœa, in metrorrhagia, in gonorrhœa, gleet, in ear troubles, in chronic inflammations of the nose, etc.

Administration.—The dose of hydrastine is from $\frac{1}{4}$ to $\frac{1}{2}$ of a grain (0.015 to 0.03 gramme). For gonorrhœa a solution may be used of the strength of from $\frac{1}{2}$ to 1 or 2 grains to the ounce (0.03 to 0.06 or 0.12 in 30.00 grammes). For external use ointments of the strength of from 10 to 60 grains to the ounce (0.65 to 3.9 in 30.00 grammes) are recommended.

HYDRASTININE.

Hydrastinine is obtained from hydrastine by a process of oxidation, and it is thus constituted chemically: $C_{11}H_{13}NO_3$.

Physical Properties.—The drug occurs in acicular crystals, with a melting-point of from 240.8° to 242.6° F. (116° to 117° C.).

Solubility.—*Hydrastinine* is freely soluble in alcohol, ether, and chloroform; but slightly so in water.

Therapeutic Applications.—The salt most generally used in practical medicine is the *hydrochloride*. The remedy is of great value in dysmenorrhœa, and is espe-

cially serviceable as a hæmostatic in almost all kinds of uterine hemorrhage.

Administration.—The *hydrochloride of hydrastinine* is best administered hypodermatically in doses of from $\frac{1}{12}$ to $\frac{1}{6}$ of a grain (0.005 to 0.010 gramme).

HYDROCHINONE.

This substance is obtained from *Arbutin*, the active principle of the *Arctostaphylos Uva Ursi*, by the action of sulphuric acid; or from aniline by oxidation with chromic acid. *Hydrochinone* is also called *Paradioxybenzene*, or commonly *Quinol*, and is represented by this formula: $C_6H_6O_2$.

Physical Properties.—*Paradioxybenzene* occurs in long, dimorphous, colorless crystals, having a melting-point of 336.2° F. (169° C.).

Solubility.—The remedy is freely taken up by hot water, alcohol, and ether. It is soluble in cold water in the proportion of 1 to 20 parts.

Therapeutic Applications.—*Hydrochinone* has been recommended as an internal antiseptic and as an antiperiodic. It has apparently produced good results.

Administration.—The dose of hydrochinone may be put down as from $\frac{1}{2}$ to 5 grains (0.03 to 0.30 gramme).

HYDROGEN PEROXIDE.

An aqueous solution of hydroxyl, having this formula: H_2O_2.

Therapeutic Applications.—The remedy is lauded as a powerful general disinfectant and germicide. It has been tried with success both in medical and surgical cases.

Administration.—The dose of *peroxide of hydrogen* is given as from $\frac{1}{2}$ to 2 drachms (1.09 to 4.36 grammes). The

solution used in practical medicine contains about ten times its volume of active oxygen.

HYDRO-NAPHTHOL.

This substance, although apparently similar to and identical with beta-naphthol, is, however, derived from this by the substitution of a molecule of hydroxyl (OH) for an atom of H.

Solubility.—*Hydro-naphthol* is soluble in water in the proportion of from 1 part in 1000 parts to 1 part in 900 parts.

Therapeutic Applications.—The remedy has quite recently been suggested as useful in the prophylactic treatment of cholera, and even in that of the fully-developed disease. The drug has been proven to be distinctly antiseptic and germicidal, respectively, in the proportion of 1 part to 7000 parts of nutritive culture-medium, and in equal parts of the remedy and a bouillon-culture of the cholera bacillus. Hydro-naphthol has been highly recommended in the treatment of simple diarrhœa, dysentery, and typhoid fever.

Administration.—The medicament may be administered as a prophylactic against cholera in doses of from 8 to 10 grains (0.5 to 0.6 gramme) three or four times a day for a few days, reducing the amount subsequently. For the other disorders mentioned, the drug may be given in quantities of ½ a drachm (1.09 gramme) in the course of the 24 hours. Hydro-naphthol is best given in capsules, wafers, emulsion, or keratin-coated pills.

HYDROXYLAMINE.

Obtained by the action of hydrogen upon nitric acid, or by the interaction of sodium hydrogen sulphite in a concen-

trated solution of sodium nitrate. The *hydroxylamine hydrochloride* is represented by this formula: NH_2OHHCL.

Physical Properties.—The salt appears in colorless crystals resembling those of the chloride of ammonium.

Solubility.—The drug is soluble in water and glycerine.

Therapeutic Applications.—The *hydrochloride of hydroxylamine* has been recommended as a substitute for anthrarobin, chrysarobin, and pyrogallol in the treatment of skin diseases. The drug has certainly done good service in lupus, and especially in parasitic disorders, such as psoriasis, mycosis tonsurans, sycosis parasitica, and others.

Administration.—The remedy is best applied locally in solutions of the strength of 1 in 1000.

HYOSCINE.

An alkaloid extracted from the seeds of the *Hyoscyamus niger*. Its chemical nature is represented by this formula: $C_{17}H_{21}NO_3$.

Physical Properties.—*Hyoscine* itself is a non-crystallizable body, but the *hydrobromide* occurs in fine colorless crystals of a rhombic form.

Solubility.—The salt is soluble in water and alcohol. The solution has a bitter and slightly pungent taste.

Therapeutic Applications.—The drug is an excellent sedative and hypnotic, and is especially useful in mental disorders, neuralgias, sexual over-excitement, and spermatorrhœa.

Administration.—The dose of hyoscine is from $\frac{1}{100}$ to $\frac{1}{30}$ of a grain (0.00065 to 0.0021 gramme); for hypodermatic use, from $\frac{1}{200}$ to $\frac{1}{50}$ of a grain (0.00032 to 0.00013 gramme).

HYPNAL.

This is a mixture of chloral and antipyrin. It is chemically known as the *Tri-chloral-dehydphenyl-dimethylpyeazolon.*

Physical Properties.—The drug is tasteless and odorless, made up of rhombic crystals, and has a melting-point of from 136° to 140° F. (58° to 60° C.).

Solubility.—*Hypnal* is soluble in water in the proportion of 5 to 6 parts.

Therapeutic Applications.—The remedy is generally employed, with good effect, as an antispasmodic, and particularly as a hypnotic.

Administration.—The dose of *hypnal* is 15 grains (1 gramme).

ICHTHYOL.

This substance is obtained from a bituminous oil by distillation, and contains about 15 per cent. of sulphur. It is the *Ammonium ichthyolsulphonate,* its chemical composition being represented in this manner: $C_{28}H_{36}S_3O_6(NH_4)_2$.

Physical Properties.—The drug is soluble in water; partly so in alcohol, ether, and petroleum benzene.

Therapeutic Applications.—The therapeutic uses of *ichthyol* are quite extensive. It is certainly advantageous as an antiphlogistic and alterative, and as an astringent, tonic, and anodyne. The medicament is of especial value in a variety of cutaneous diseases. While not a true germicide, it is said to arrest the development of bacteria. Internally the remedy has given good results in the treatment of diseases of the gastro-intestinal tract, of the kidneys, in rheumatism, in syphilitic disorders, and even in leprosy, etc.

Administration.—The internal daily dose of *ichthyol* is from 10 to 30 grains (0.6 to 2 grammes), and is then best

administered in capsules or in pill-form. For external applications, solutions, and ointments, in chloroform, glycerine, and lanolin respectively, of the strength of from 10 to 50 per cent., may be employed.

INULIN.

This principle is obtained from the root of the *Inula helenium*, and is chemically represented by $(C_6H_{10}O_5)_2$.

Physical Properties.—*Inulin* occurs as a white, crystalline powder, made up of refracting crystals.

Solubility.—The drug is soluble in water.

Therapeutic Applications.—Inulin has been recommended as a stimulating expectorant, and in diabetes.

Administration.—The dose of inulin is from 1 to 3 grains (0.06 to 0.18 gramme). *Inulin bread* is manufactured for the use of diabetic patients.

IODOL.

Obtained by the interaction of pyrrol and iodine. It is the *Tetra-iodo-pyrrol*, the chemical composition of which is as follows: C_4I_4NH.

Physical Properties.—*Iodol* occurs as a grayish-brown, odorless, and tasteless powder; when pure, it is of a pale yellow hue and more or less crystalline, decomposing between 284.8° and 302° F. (140° and 150° C.), with the evolution of iodine vapors.

Solubility.—*Tetra-iodo-pyrrol* is soluble in alcohol and ether, but is scarcely so in water.

Therapeutic Applications.—*Iodol* has been employed successfully as a substitute for iodoform. It is antiseptic and alterative, and highly valuable in syphilitic and tubercular disorders, in troubles of the ear, larynx, tonsils,

trachea, etc. Of late the remedy has been found of service in the treatment of diabetes mellitus.

Administration.—Internally, the daily dose of iodol is from 6 to 20 grains (0.3 to 1.3 gramme), and even as high as 40 grains (2.6 grammes). Externally, it is applied as a dusting-powder, or in the form of solution and ointments of a strength varying from 1 to 30 parts and 1 to 15 parts respectively.

IODO-NAPHTOL-BETA.

This drug, similarly termed *Naphtol-beta diiodide*, is obtained from the interaction of naphtol-beta and iodine.

Physical Properties.—The *diiodide of naphtol-beta* appears in the form of a greenish-yellow powder, tasteless and odorless.

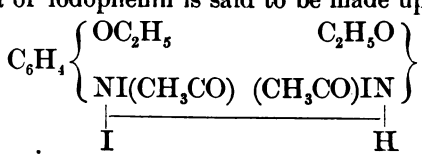
Solubility.—The remedy is readily soluble in chloroform; slightly so in alcohol, acetic acid, and ether; insoluble in water.

Therapeutic Applications.—Iodo-naphtol-beta has been particularly recommended as a substitute for iodoform in the treatment of wounds and ulcers. It is claimed to be a highly serviceable antiseptic.

Administration.—The diiodide of naphtol-beta may be applied as a dusting-powder.

IODOPHENIN.

Similarly termed *Iodo-phenacetin*, this body is a compound allied to phenacetin. It contains 50 per cent. of iodine. Though not accurately worked out, the chemical formula of iodophenin is said to be made up of—



Physical Properties.—*Iodophenin* is a brownish powder, but when pure is a crystalline body, of an iodine odor and a burning taste, and colors the skin yellow. It melts and decomposes at from 266° to 267.8° F. (130° to 131° C.).

Solubility.—The drug is soluble in alcohol, glacial acetic acid, and boiling hydrochloric acid.

Therapeutic Applications.—The remedy is employed only for its antiseptic properties.

Administration.—Iodophenin is locally applied.

IODOPYRIN.

Also called *Iodantipyrin*, this drug is a substitute-product of antipyrin, in which one atom of hydrogen in the benzene nucleus is replaced by iodine. Its formula then is as follows: $C_6H_4IN\begin{matrix}CO.CH\\ \diagdown\\ \diagup\\ NCH_3.CCH_3\end{matrix}$.

Physical Properties.—*Iodopyrin* appears as a colorless and tasteless substance made up of acicular, prismatic crystals, having a melting-point of 336° F. (160° C.).

Solubility.—The drug is soluble in hot, but scarcely so in cold water.

Therapeutic Applications.—*Iodopyrin* is used for its antipyretic effects. It has rendered good service in the treatment of typhoid fever and tuberculosis, and appears also to possess analgesic properties similar to those of antipyrin.

Administration.—The remedy is given in doses of from 1 to 15 grains (0.06 to 1 gramme).

JAMBUL.

No chemical studies have yet been made of this plant, which is the *Eugenia jambolana* or *Syzyginium jambolana*.

Physical Properties.—*Jambul* appears in the form of a brown powder.

Solubility.—The drug is soluble in alcohol, but not in water.

Therapeutic Applications.—The new medicament has been found particularly useful in the treatment of diabetes mellitus. It has also some value in the diarrhœas of children.

Administration.—Jambul powder is given in doses of from 10 to 15 grains (0.6 to 1 gramme).

KAIRIN.

The *ethyl-kairin*, or *hydrochloride of oxy-chinoline ethyl*,[1] is obtained from chinoline, its formula being as follows: $C_9H_{10}(C_2H_5)NOHCl$.

Physical Properties.—*Kairin* is a bitter nauseous substance.

Solubility.—The drug is soluble in water, less so in alcohol, but insoluble in ether.

Therapeutic Applications.—Kairin has been used for its antipyretic properties as a succedaneum of quinine.

Administration.—The remedy is best administered in pill-form, in doses of from 5 to 15 grains (0.3 to 1 gramme).

KAVA-KAVA.

This drug, known under a variety of names, such as kava, ava, kara, kawa, yangona, and kava-kava, is the *Piper methysticum* and other species. It has not as yet been thoroughly studied. It is said to contain a principle

[1] A new body with the name of *Ortho-oxyethyl-ana-mono-acetylamidochinoline*, recently brought out, is said to possess also antipyretic properties, but has not yet been used in practical medicine.

which has received various names, such as *methysticin, lervinin, kavahin,* and *yangonin,* the true nature of which, however, remains unknown.

Therapeutic Applications.—*Kava-kava* is a local anæsthetic; but it is chiefly employed as a bitter tonic and as a useful remedy in the treatment of inflammations of the genito-urinary tract.

Administration.—The best preparation of the plant is the fluid extract, which may be given in single doses of from 15 to 60 minims (1 to 4 grammes).

KOUSSEIN.

The active principle obtained from the dried flowers and unripe fruit of the *Brayera anthelmintica,* or the *Hagenia abyssinica.* Its chemical composition has not been made out.

Physical Properties.—*Koussein* is an amorphous, yellowish-brown crystalline powder, having a bitter and pungent taste.

Solubility.—The drug is readily soluble in alcohol, chloroform, and ether, but slightly so in water.

Therapeutic Applications.—Koussein is chiefly employed as an anthelmintic.

Administration.—The remedy is best given in pill-form in doses of from 15 to 30 grains (1 to 2 grammes), and even as high as a drachm (4 grammes).

LACTUCINE.

This principle, whose chemical composition has not yet been determined, is taken from the juice of the common lactucarium or *Lactuca virosa.*

Physical Properties.—*Lactucine* appears in white scales.

Solubility.—The drug is soluble in alcohol and in water in the proportion of 60 to 80 parts.

Therapeutic Applications.—The remedy is said to possess sedative and hypnotic virtues.

Administration.—Lactucine may be given in doses of from 1 to 5 grains (0.06 to 0.3 gramme).

LANOLIN.

A fat obtained from sheep's wool, containing about 30 per cent. of water. Its technical name is *Adeps lanæ hydrosus.*

Physical Properties.—This substance is white and odorless, and does not affect moist litmus. A good preparation should melt between 98.6° and 113° F. (37° and 44° C.). Unlike glycerine, it does not saponify by the action of aqueous alkalies. Saponification of *lanolin* takes place by heating this with alcoholic potash.

Solubility.—*Lanolin* is insoluble in water, partly soluble in alcohol; but is readily taken up by ether, benzene, and acetone.

Therapeutic Applications.—Lanolin is particularly advantageous as an absorbent, powerfully resisting, besides, the decomposing action of organisms. The drug by itself, or, better still, in combination with resorcin, is serviceable in diseases of the skin, such as eczema, acne, and others, in many of which it greatly relieves the itching. It is also valuable as a local application in the treatment of the eruptive fevers. It is one of the best ointment bases known. The remedy has given excellent results in the treatment of gonorrhœa, applied by means of a bougie.

Administration.—Lanolin is only used locally by itself or in combination with other remedies.

LANTANINE.

An alkaloid obtained from *Lantana brasiliensis*, the chemical composition of which has not as yet been made out.

Therapeutic Applications.—The drug is alleged to be an antipyretic and antiperiodic. It is said to have done good service in cases of malaria in which quinine had failed.

Administration.—The dose of *lantanine* is given as from 15 to 30 grains (1 to 2 grammes).

LEPTANDRINE.

This glucosidal principle, not yet fully examined as regards its chemical nature, is obtained from the rhizome of *Leptandra virginica*.

Therapeutic Applications.—*Leptandrine* is a stimulant to the biliary secretion, and is alleged to possess purgative properties; it is especially applicable when the stools are clay-colored.

Administration.—The dose of leptandrine is put down as from 1 to 3 grains (0.06 to 0.18 gramme).

LIPANIN.

This substance is simply a mixture of olive oil and oleic acid in the proportion of 1 to 6 parts.

Therapeutic Applications.—The remedy has been used with success as a substitute for cod-liver oil in those affections in which the latter remedy is indicated. *Lipanin* appears to give better results in such cases when given in combination with the hypophosphites of calcium and sodium.

Administration.—The dose of lipanin is from 1 to 4 drachms (4 to 15 grammes).

LITHIUM SALICYLATE.

This salt, recently introduced into practical medicine, is represented by this formula: $LiC_7H_5O_3,\frac{1}{2}Aq$.

Physical Properties.—*Lithium salicylate* occurs as a white powder.

Solubility.—The salt is readily soluble in alcohol, and to a certain extent in water.

Therapeutic Applications.—The *salicylate of lithium* has been employed successfully in articular rheumatism, as a substitute for the sodium salt, and is said to be superior to this in chronic rheumatic affections.

Administration.—The daily dose of lithium salicylate is 1 drachm (4 grammes).[1]

LOBELINE.

This alkaloid, extracted from the seeds and leaves of *Lobelia inflata*, has not been studied in a thorough manner chemically.

Physical Properties.—The alkaloidal principle appears as a yellowish liquid of the consistency of syrup. The sulphate, however, is a yellowish-white powder.

Therapeutic Applications.—The salt has been recommended as an antispasmodic in the treatment of asthma and bronchitis, especially in the spasmodic forms of those disorders.

Administration.—The dose of the sulphate of lobeline is from 1 to 6 grains (0.06 to 0.36 gramme), given either by the mouth or hypodermatically.

[1] Two other salts, the *Lithium theobromine salicylate* and the *Lithium dithiosalicylate*, have been brought to the notice of the profession: the first as a diuretic in cardiac dropsies, in doses of 15 grains (1 gramme) four times a day; and the second as a good remedy in the treatment of rheumatic disorders, especially gout and arthritis.

LYSOL.

This substance is obtained from tar oils by boiling with alkalies and fats, and contains about 50 per cent. of cresols.

Physical Properties.—*Lysol* appears as a brown, unctuous-looking, clear liquid, of an aromatic odor resembling that of creasote. The saponaceous character of lysol renders instruments immersed in its solutions somewhat slippery. It has a sp. gr. of 1.042.

Solubility.—The drug is soluble in water, alcohol, chloroform, glycerine, carbon disulphide, and benzin.

Therapeutic Applications.—*Lysol* is used as a general antiseptic in surgery and gynecology. It has been found of value in diseases of the skin, particularly in lupus. The drug has been recommended in diphtheria and as a gargle for foul breaths.

Administration.—Lysol is used locally in solutions of the strength of from 3 to 5 per cent.

MECONARCEINE.

The chemical nature of this drug has not been definitely determined; it is said to be a derivative of narceine contained in opium.

Physical Properties.—The substance appears in lemon-yellow crystals, having a melting-point of 358.8° F. (126° C.), accompanied with some decomposition.

Solubility.—*Meconarceine* is soluble in 50 per cent. alcohol, and to some extent in boiling water.

Therapeutic Applications.—The remedy has been lauded, given internally, in bronchial affections, neuralgias, and insomnia. It has been somewhat effective in the treatment of the opium-habit.

Administration.—The dose of *meconarceine* may be set down as from $\frac{1}{6}$ to $\frac{1}{2}$ of a grain (0.01 to 0.03 gramme).

MENTHOL.

Obtained from the oil of peppermint-camphor and the essential oils of other plants. Menthol is represented chemically as follows: $C_{10}H_{10}OH$.

Physical Properties.—The drug is made up of colorless, acicular crystals, of a prismatic form, having an odor resembling that of peppermint. It melts at 107.6° F. (42° C.), and boils at 413.6° F. (212° C.).

Solubility.—*Menthol* is soluble in ether and the fixed oils; slightly so in water.

Therapeutic Applications.—The remedy is a stimulant, sedative, and anæsthetic. It is serviceable as a stomachic and carminative, and has been used with success in colicky pains and the vomiting of pregnancy. Influenza and pulmonary tuberculosis have received benefit from its action. Locally applied, the drug is recommended in migraine and neuralgias.[1]

Administration.—The remedy is best given in pill-form or emulsion, in single doses of from $\frac{1}{2}$ to 2 grains (0.03 to 0.12 gramme).

MERCURIAL IMIDO-SUCCINATE.

The formula of this compound is given as $(C_2H_4(CO)_2N)Hg$.

Physical Properties.—This substance appears in the form of a white, crystalline powder.

[1] The *Benzoate of menthol* and *Choral-menthol* are two combinations, especially the latter, which have produced good results in the local treatment of toothache, migraine, neuralgias, etc.

Solubility.—The *Imido-succinate of mercury* is soluble in water and alcohol, in the proportion of 1 to 25 and 1 to 300 parts, respectively.

Therapeutic Applications.—*Mercuric imido-succinate* has been used chiefly as an antisyphilitic.

Administration.—The dose of the remedy is $\frac{1}{5}$ of a grain (0.012 gramme).

MERCURIC PHENYLATE.

This salt, also called *mercuric carbolate*, is represented by this formula: $(C_6H_5O)_2Hg$.

Physical Properties.—The drug appears in the form of colorless needles.

Solubility.—*Phenylate of mercury* is readily soluble in hot alcohol, ether, and glacial acetic acid; it is not soluble in water.

Therapeutic Applications.—*Mercuric carbolate* is principally employed in the treatment of syphilitic affections.

Administration.—The dose of this drug is from $\frac{1}{3}$ to $\frac{1}{2}$ of a grain (0.02 to 0.03 gramme), twice or thrice a day.

MERCURIC SALICYLATE.

The composition of this substance is $C_6H_4OCO_2Hg$.

Physical Properties.—The *salicylate of mercury* occurs as a white, neutral powder, odorless and tasteless.

Therapeutic Applications.—*Mercuric salicylate* has been successfully employed both internally and externally in the treatment of syphilitic disorders and in gonorrhœa.

Administration.—The salt is best administered in pill-form, in single doses of from $\frac{1}{60}$ to $\frac{1}{8}$ of a grain (0.001 to 0.008 gramme). In gonorrhœa injections of the strength of 0.4 in 1000 may be employed.

MERCURIC THYMOLACETATE.

A substance with a chemical composition represented as follows: $(C_{10}H_{13}O)Hg.—HgC_2H_3O_2$.

Therapeutic Applications.—This remedy is not only used against syphilis, but is also of value in the treatment of pulmonary tuberculosis.

Administration.—*Thymolacetate of mercury* is given internally in pill-form, hypodermatically, or in intramuscular injections, in doses of from $\frac{1}{12}$ to $\frac{1}{6}$ of a grain (0.005 to 0.010 gramme).

MERCURIC THYMOLATE.

Another compound of mercury, having a formula of $(C_{10}H_{13}O)Hg.—HgNO_3$

Physical Properties.—The drug when pure is odorless and tasteless, but is liable, on exposure, to acquire a slight odor of thymol.

Therapeutic Applications.—*Thymolate of mercury* has been recommended particularly in the treatment of syphilis.

Administration.—The dose is about the same as that of the thymolacetate.[1]

[1] Many other combinations of mercury have of late been brought to the notice of the profession, chief among which may be mentioned the *Benzoate* $(C_6H_5COO)_2Hg$, H_2O, a crystalline body, tasteless, odorless, and soluble in hot water and alcohol; the *Formamidate;* the *Naphtolate*, an odorless, lemon-yellow powder, containing about 30 per cent. of mercury; the *Naphtolacetate*, a white, crystalline substance; the *Oxycyanide*, $Hg_2O\ (CN)_2$; the *Peptonate*, a yellowish liquid, with a saline and slightly metallic taste; the *Tannate*, occurring in brownish-green, colorless and tasteless scales; and the *Thymolsulphate*. All these salts have also been recommended in the treatment of syphilis. Other mercuric compounds will be described under other names.

METALDEHYDE.

The action of polymerizing agents upon aldehyde at a temperature below 32° F. (0° C.) gives rise to the formation of *Metaldehyde.* This may also be obtained by passing hydrochloric acid vapors through acetic aldehyde, and then freezing the mixture. It is a body represented by this formula: $(C_2H_4O)n$.

Physical Properties.—The drug is a white, crystalline substance, made up of needles or tetragonal prisms, which sublime between 233.6° and 239° F. (112° and 115° C.) without melting.

Solubility.—*Metaldehyde* is readily soluble in hot alcohol and ether, but insoluble in water.

Therapeutic Applications.—The medicament possesses hypnotic virtues similar to those of paraldehyde, but its use in practical medicine has not been very extensive.

Administration.—The dose of metaldehyde may be said to be more or less the same as that of paraldehyde (?).

METAMIDOPHENYLPARAMETHOXY-CHINOLIN.

Therapeutic Applications.—This drug has recently been recommended as an antiperiodic in the treatment of malarial diseases, in which it is said to be equal to quinine.

Administration.—It has been given in doses of from $3\frac{4}{5}$ to $7\frac{3}{4}$ grains (0.25 to 0.50 gramme).

METHACETINE.

This name is applied to *Para-acetanilidin* or *Para-oxymethylacetanilid,* being thus chemically constituted: $C_6H_4.OCH_3:NHCH_3CO$.

Physical Properties.—*Methacetine* occurs in crystalline scales, almost colorless or somewhat reddish, and without taste. It melts at 260.6° F. (127° C.).

Solubility.—The drug is readily soluble in alcohol, chloroform, glycerine, and warm fatty oils; also in water in the proportion of 1 to 260 parts.

Therapeutic Applications.—*Methacetine* has been much lauded as an antiseptic and analgesic. It is suitable in infantile febrile diseases. The remedy has proved to be of value in rheumatic and tubercular affections.

Administration.—Methacetine is given in doses of from 2 to 5 grains (0.12 to 0.3 gramme), and is best administered in mucilage or cachets.

METHOXYCAFFEINE.

A derivative of caffeine, and found also in other allied plants. Its chemical composition is made up as follows: $C_8H_9(OCH_3)H_4O_2$.

Physical Properties.—The drug appears in white, crystalline needles, having a melting-point of 350.6° F. (177° C.).

Therapeutic Applications.—*Methoxycaffeine* has been found beneficial in cases of migraine and neuralgias. It is even said to possess anæsthetic properties superior to those of cocaine, especially when it is injected hypodermatically.

Administration.—The dose of the medicament is about 4 grains (0.24 gramme).

METHYLAL.

Methylal is also designated by the term *Methyenmethyl-ether*, and results from the interaction of methylic alcohol, binoxide of manganese, and sulphuric acid. It is represented thusly: $CH_2(OCH_3)_2$.

Physical Properties.—*Methylal* is a highly volatile liquid, of a penetrating, ethereal odor. Its melting-point is 107.6° F. (42° C.), and it has a sp. gr. of 0.855.

Solubility.—The remedy is soluble in alcohol and ether, in fatty and ethereal oils; in water in the proportion of 1 to 13 parts.

Therapeutic Applications.—Methylal has been used with marked effect as a hypnotic, and particularly in the treatment of insanity and the insomnia of delirium tremens. It has also been employed as a local anæsthetic.

Administration.—The dose of methylal varies from 15 to 30 minims (1 to 2 grammes), and even as high as 2 drachms (8 grammes).

METHYL CHLORIDE.

Other names are applied to this substance, such as *Chlormethyl* and *Monochlormethane.* It is obtained by the action of hydrochloric acid upon alcohol. Its chemical composition is represented as follows: CH_3Cl.

Physical Properties.—*Chloride of methyl* is a colorless gas, with an odor resembling that of ether and chloroform. It is somewhat inflammable, and burns with a greenish flame. It liquefies at —13°F. (—25° C.), and at —9.6° F. (—23.7° C.) has a sp. gr. of 0.9915. It boils at —5.8° F. (—21° C.).

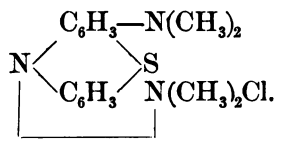
Solubility.—*Chlormethyl* is readily soluble in ether and chloroform, less so in alcohol; in water, in one-fourth its volume.

Therapeutic Applications.—The most marked properties of the drug are those of an anæsthetic, and as such it has been employed in minor surgical operations. It has rendered good service in the local treatment of neuralgia, spinal pains, pruritus, etc.

Administration.—The remedy is best applied in the form of a spray.

METHYLENE BLUE.

This substance is classed as one of the aniline dyes, and is also called *Tetramethylthionine*. Its chemical formula is represented in the following manner:—



Physical Properties.—The drug appears as a bluish powder, composed of scaly crystals, dark green in transverse fracture, and of a bronze-like tinge.

Solubility.—*Methylene blue* is somewhat soluble in water, and more so when this vehicle contains alcohol.

Therapeutic Applications.—The new remedy has been largely used with apparent success as an anodyne in the treatment of rheumatic and neuralgic disorders, and similarly in pulmonary tuberculosis and scrofula. Quite recently it has been highly recommended as an antiperiodic, particularly in cases in which quinine has failed.

Administration.—The dose, internally, varies from 1½ to 8 grains (0.09 to 0.52 gramme), and is best given in wafers or capsules. Hypodermatically it can be injected in from ⅓ to 1 grain (0.02 to 0.06 gramme).

METHYLENE CHLORIDE.

This drug, also known by the name of *Dichlormethane*, and obtained by the action of chlorine on monochlormethane, or by reducing chloroform by zinc and hydrochloric acid, has this composition: CH_2Cl_2.

Physical Properties.—*Chloride of methylene* is a colorless liquid, with an odor resembling that of chloroform. Its sp. gr. at 59° F. (15° C.) is 13.6; it melts at 106° F. (41.6° C.).

Solubility.—The drug is soluble in alcohol and ether.

Therapeutic Applications.—*Methylene chloride* has been recommended as a substitute for chloroform, but is now chiefly employed as a local anæsthetic.

Administration.—The drug is used solely in the form of a spray.

MICROCIDIN.

The common name of microcidin is given to a mixture of β-naphthol with sodium hydrate. It may be said to be a *naphtholate of sodium.*

Physical Properties.—*Microcidin* is a white powder.

Solubility.—*Sodium naphtholate* is soluble in water in the proportion of 1 to 3 parts.

Therapeutic Applications.—Microcidin is employed as an antiseptic, both externally and internally. It has also some antipyretic properties. It is particularly used in the treatment of wounds.

Administration.—The remedy is applied in solutions of the strength of from 3 to 5 in 1000.

MONOCHLOR-PHENOL.

A body chemically constituted as follows: C_6H_4Cl,OH.

Therapeutic Applications.—This drug is alleged to have given satisfactory results as an antiseptic in the treatment of laryngitis and pulmonary tuberculosis.

Administration.—*Monochlor-phenol* is best administered by inhalation.

MORRHUOL.

The active principle of cod-liver oil.

Therapeutic Applications.—*Morrhuol* has the same uses as cod-liver oil.

Administration.—The drug is best given in capsules, in doses of 3 grains (0.20 gramme).

MUSCARINE.

An alkaloid obtained from a fungus, the *Agaricus muscarius*, having a formula of $C_5H_{15}NO_3$.

Physical Properties.—*Muscarine* appears as a crystalline, hygroscopic substance.

Solubility.—The alkaloid is freely soluble in alcohol.

Therapeutic Applications.—This remedy has of late been employed with apparent success in the treatment of diabetes insipidus.

Administration.—The proper dose has not been determined with accuracy.

MUSSANIN.

This name is applied to the *Acacia anthelmintica*, whose chemical constitution has not yet been studied.

Therapeutic Applications.—*Mussanin* has been introduced into practical medicine as a powerful anthelmintic, and as such is considered superior to kousso.

Administration.—The new remedy is given in the form of an infusion in doses of from 1 to 2 ounces (32 to 64 grammes).

MYRTOL.

This substance is obtained from the oil of *Myrtus communis*, and is supposed to be a mixture of dextro-pinene and eucalyptol.

Physical Properties.—*Myrtol* occurs as a clear liquid, with a not unpleasant odor.

Therapeutic Applications.—*Myrtol* has been recommended as a prompt remedy in diseases of the respiratory tract.

Administration.—The dose of myrtol is put down as 5 minims (0.30 gramme).

NAPELLINE.

An alkaloid obtained from the root of the common wolfsbane or monkshood, the *Aconitum napellus.*

Physical Properties.—The drug appears as an amorphous, white powder.

Solubility.—*Napelline* is soluble in ether and water.

Therapeutic Applications.—Napelline is chiefly employed as an antineuralgic, and has been used with asserted success as a substitute for morphine in cases of habitués to this alkaloid or to opium.

Administration.—The dose of the drug varies from $\frac{1}{6}$ to $\frac{1}{2}$ of a grain (0.010 to 0.03 gramme).

NAPHTHALENE.

Also styled *Naphthalin*, a hydrocarbon obtained from coal-tar, which is similarly produced synthetically from phenylbutylene by the action of heat. Its formula is $C_{10}H_8$.

Physical Properties.—The medicament occurs as a grayish-white powder made up of large brilliant scales, with a coal-tar-like odor, and an aromatic, bitter taste. Its sp. gr. is 1.158; it melts at 176° (80° C.) and boils at 428° F. (220° C.).

Solubility.—*Naphthalin* is soluble in alcohol, ether, the fixed and volatile oils, and in acetic acid. It is insoluble in water.

Therapeutic Applications.—The drug has been recommended as a vermifuge against the oxyuris vermicularis; as an expectorant in chronic catarrh of the lungs; as an antiseptic in chronic diarrhœa and typhoid fever; and as an antispasmodic in whooping-cough. Externally *naphthalene* is of service particularly in diseases of the skin, such as eczema, psoriasis, lepra, etc., and as a disinfectant in the treatment of wounds.

Administration.—Internally, the dose of naphthalin is from 2 to 15 grains (0.12 to 1 gramme); it is best given in pill-form, in mucilage, in cachets, or in capsules. For external application, solutions or ointments of the strength of 10 to 12 and 5 to 10 per cent., respectively, may be used, or the drug may be employed as a dusting-powder, disguising the odor with a few drops of the oil of bergamot. Inhalations may also be employed.

NAPHTHOL.

Iso- or *Beta-naphthol*, another name of this drug, is a compound obtained from naphthalene by a process of substitution, through the prolonged action of sulphuric acid. A hydrogen atom is replaced by a hydroxyl group, and thus its formula is represented by $C_{10}H_7OH$ or $C_{10}H_8O$.

Physical Properties.—*Iso-naphthol* is a brilliant, colorless, crystalline body, having an odor resembling that of phenic acid, and a slight burning taste. Its melting-point is 253.4° F. (123° C.), and it boils at 546.8° F. (286° C.). A solution in water gives a bluish-violet fluorescence on the addition of ammonia or soda. Ferric chloride exhibits a green tint, by which it is distinguished from alpha-naphthol, which gives a violet color with the same reagent.

Solubility.—*Beta-naphthol* is readily soluble in alcohol, ether, chloroform, benzene, and the fatty oils; it is almost insoluble in cold, but fairly so in hot water.

Therapeutic Applications.—Beta-naphthol is much used as a general antiseptic in cutaneous diseases, organic or parasitic, and in affections of the respiratory tract. It has been of service in the treatment of chronic middle-ear disease, and as an intestinal antiseptic in typhoid and typhus fevers and in chronic diarrhœa. The remedy has bactericidal powers.

Administration.—The internal dose of naphthol varies from 2 to 15 grains (0.12 to 1 gramme). Externally, alcoholic solutions of the strength of from 2 to 10 per cent., or ointments of the strength varying from 3 to 10 per cent., are employed.[1]

NAREGAMIA.

This new plant, belonging to the family *Meliaceæ*, and commonly called *Goa ipecacuanha*, is the *Naregamia alata*, which is stated to contain an alkaloid, *Naregamine*.

Therapeutic Applications.—The drug is said to be highly serviceable in dysentery and bronchial catarrhs. It is recommended also as an expectorant in diseases of the respiratory tract, especially in pulmonary emphysema.

Administration.—A tincture of the plant is given in doses of from 16 to 48 minims (1 to 3 grammes) per day.

[1] There are other allied compounds and derivatives of naphthol, chief among which may be mentioned: *Naphthol-aristol* or *Di-iod-beta-naphthol*, a mixture of iodine, iodide of potassium, beta-naphthol, and carbonate and hypochloride of sodium; *Naphthol-camphor*; *Naphtopyrin*, a combination of naphthol and antipyrin; *Alpha-naphthol*, *Alpha-oxynaphtoic acid*, and others already described under various names. Most of these derivatives and compounds have been used for the same purposes as beta-naphthol itself.

NICOTINE.

A new salt of the alkaloid of *Nicotia tabacum* is the *Bitartrate*, whose chemical constitution is as follows: $C_{10}H_{14}N_2(C_4H_6O_6)_2$.

Physical Properties.—The salt occurs in white, fine crystals, with a tendency to run together.

Solubility.—The *Bitartrate of nicotine* is freely soluble in water.

Therapeutic Applications.—The new salt has been highly recommended in the treatment of tetanus, and is alleged to be an effective physiological antidote to strychnia.

NITROGLYCERINE.

Commonly called *Glonoine* or *Trinitrine*. It is the *Trinitrate of glycerol*, obtained by the action of sulphuric and nitric acids upon glycerine.

Physical Properties.—*Nitroglycerine* is an oily substance, colorless and odorless, and of a sweetish taste. It has a sp. gr. of 1.60.

Solubility.—*Trinitrine* is soluble in alcohol and ether, but is insoluble in water.

Therapeutic Applications.—The remedy is a powerful sedative in nervous disorders, and has been used with excellent results in the treatment of angina pectoris, in sick headache, in asthma, and in sea-sickness. It has also been employed successfully in epilepsy, especially in *petit-mal*, in puerperal convulsions, and in Bright's disease.

Administration.—It is best administered in chocolate lozenges; the dose varying from $\frac{1}{100}$ to $\frac{1}{50}$ of a grain (0.00065 to 0.0013 gramme).

OREXIN.

The above common name is given to the *Phenyl-dihydro-quinazoline hydrochlorate*, a derivative of chinoline, its chemical formula being as follows: C_6H_4-CH_2N,CHN,-$C_6H_5HCl + H_2O$.

Physical Properties.—*Orexin* is a grayish, odorless powder, made up of brilliant crystals, with a tendency to efflorescence on exposure. It has a bitter and pungent taste.

Solubility.—The drug is soluble in water and alcohol.

Therapeutic Applications.—Orexin is claimed to possess stomachic virtues, and is said to be an excellent appetizer. The remedy is especially valuable in the anorexia of anæmia, early phthisis, and that occurring in chronic gastric catarrh. The medicament appears to stimulate principally the secretion of hydrochloric acid.

Administration.—The dose of orexin is 3 grains (0.2 gramme), once or twice a day, and it is best administered in wafers, *not* in pill-form, at meal-time.

ORTHINE.

This body is a derivative of phenylhydrazine, its chemical name being *Orthohydrazin-para-oxybenzoic acid.*

Physical Properties.—The drug in the free state is unstable, but the *Hydrochlorate* is a good and stable preparation.

Solubility.—*Orthine* is soluble in water.

Therapeutic Applications.—The remedy has been found to be a very decided antipyretic, and as such it has been employed with success in typhoid fever, acute articular rheumatism, pneumonia, and other febrile disorders.

Administration.—Orthine is given in doses of from 5 to 8 grains (0.30 to 0.50 gramme).

OSMIC ACID.

This acid, also termed *Perosmic acid, Hyperosmic acid, Tetroxide of osmium,* is chemically constituted as OsO_4.

Physical Properties.—The acid occurs in yellow crystalline needles, having a very strong, disagreeable odor. It boils at 212° F. (100° C.), and in solution has a burning taste.

Therapeutic Applications.—Osmic acid has of late been highly recommended in the treatment of goitre. It is also asserted to be of service in scrofula, cancerous ulcers, and in neuralgia, and particularly in sciatica. Epilepsy is said to be greatly benefited by the remedy.

Administration.—The acid is best administered hypodermatically in doses of from $\frac{1}{50}$ to $\frac{1}{12}$ of a grain (0.0013 to 0.0054 gramme). Internally it may be given in pill-form in the same quantities.

OUABAÏNE.

This is the glucosidal principle of the ouabaio plant, the *Acocanthera ouabaio,* or the *Carissa shimperi,* belonging to the *Apocynaceæ.* The glucoside is said also to be obtained from the seeds of the *Strophanthus glabrus.* The principle has this chemical composition : $C_{30}H_{46}O_{12}$.

Physical Properties.—Ouabaïne is a white, crystalline body, without odor and having a slight bitter taste. It has a melting-point of 392° (200° C.).

Solubility.—The drug is readily dissolved in hot water and spirit; sparingly so in cold water. It is insoluble in alcohol, chloroform, and anhydrous ether.

Therapeutic Applications.—*Ouabaïne* is a local anæsthetic to the conjunctiva and cornea. It has been principally used as a powerful antispasmodic, and is said to be of especial value in the treatment of whooping-cough of children.

Administration.—The dose of ouabaïne is $\frac{1}{1000}$ of a grain (0.00004 gramme), every 3 hours for a child five years of age.

PAMBOTANO.

This plant is the *Calliandra houstoni*, of the *Leguminaceæ* family. No thorough chemical analysis of it has yet been made.

Therapeutic Applications.—The drug is claimed to be of service as an antiperiodic in the treatment of neuralgias and fevers of malarial origin especially.

Administration.—The preparation in use at present is a decoction or an elixir, the dose of which varies from 1 to 2½ ounces (30 to 75 grammes).

PAPAYOTIN.

Similarly known as *Papain, papayotin* is an active principle obtained from the unripe fruit of *Caricaya papaya*.

Physical Properties.—*Papayotin* is a white, amorphous, odorless, crystalline, hygroscopic powder.

Solubility.—Papain is soluble in water and glycerine; but insoluble in alcohol, ether, and chloroform.

Therapeutic Applications.—The drug has been used with asserted success as a powerful digestive agent in dyspepsia and catarrh of the stomach, especially when there is a deficiency of the gastric juice. It has similarly been

employed as a local remedy in diphtheria and croup to dissolve the membranes.

Administration.—Internally, the dose of papain is from 1 to 5 grains (0.06 to 0.3 gramme). Locally, it may be employed in solutions of the strength of 5 per cent., the applications being carefully made every 10 or 15 minutes.

PARACOTOIN.

This principle, allied to cotoin, is obtained from the bark of the para-coto plant, supposed to be the *China coto*. Chemical analysis represents the drug as having a composition of $C_{19}H_{12}O_6$.

Physical Properties.—The medicament appears as a yellowish, crystalline powder, without odor or taste.

Solubility.—The drug is quite readily soluble in alcohol, but difficultly so in ether and water.

Therapeutic Applications. — *Paracotoin* is highly spoken of as a valuable remedy in diarrhœa, being also beneficial in the simple forms of gastric and intestinal catarrhs. It is likewise said to be of service in the diarrhœa and night-sweats of phthisical patients. It has been tried successfully in the treatment of Asiatic cholera.

Administration.—Paracotoin is given in the powdered form or in mixture, the dose of it being from 2 to 3 grains (0.12 to 0.18 gramme).

PARACRESALOL.

This substance, also designated by the name of *Cresalol*, is the *Salicylate of paracresol*, whose composition is represented by this formula: C_6H_4-OH,COO,C_6H_4,CH_3.

Physical Properties.—*Paracresalol* occurs as a white, crystalline powder, with an odor resembling that of salol. It melts at 98.8° F. (36° C.).

Solubility.—The drug is slightly soluble in alcohol; insoluble in water.

Therapeutic Applications.—*Cresalol* is analogous to salol in its therapeutic uses. It is of especial value as an intestinal antiseptic.

Administration.—The dose of the drug, this being best given in wafers, is from 3 to 30 grains (0.20 to 2 grammes) during the day.

PARALDEHYDE.

Paraldehyde, similarly termed *Paraldehydum* and *Elaldehyde*, is a polymeric modification of acetic aldehyde; a product resulting from the condensation of three molecules of ethyl aldehyde, its formula being: $(C_2H_4O)_3$ or $C_6H_{12}O_3$.

Physical Properties.—*Paraldehyde* is a colorless liquid, having a disagreeable ethereal odor and a burning taste; it boils at 255° F. (124° C.); crystallizes at 50° F. (10° C.), and has a sp. gr. of 0.998.

Solubility.—*Elaldehyde* is soluble in alcohol, ether, and the fixed oils; also in water at 60° F. (15.5° C.), in the proportion of 1 to 10.

Therapeutic Applications.—Paraldehyde is chiefly employed as a hypnotic and antispasmodic. As a sleep-producing agent it is quite efficient, the characteristic effects becoming manifest in from 5 to 15 minutes. It has produced excellent results in asthma and in those cases of simple insomnia accompanied with convulsive symptoms, such as cough and other distressing phenomena. The drug relieves particularly the nervous insomnia of insanity.

Administration.—The medicament is best given diluted, combined with some bitter tincture, in spirits or in emul-

sion, by the rectum or by the mouth. The dose of it varies from 30 to 60 minims (2 to 4 grammes).

PARTHENICINE.

The alkaloid of the *Parthenium hysteriophorus.*

Therapeutic Applications.—The drug has not been sufficiently studied, but is said to possess anti-neuralgic properties.

PELLETIERINE TANNATE.

The alkaloid of the pomegranate bark, or the *Punica granatum, pelletierine* ($C_8H_{15}NO$), is a colorless liquid which forms salts with the acids. The chief salts known are the *hydrobromate,* the *hydrochlorate,* the *sulphate,* and the *tannate.* The last one is represented by this formula: $C_8H_{13}NO.C_{14}H_{10}O_9$.

Physical Properties.—This salt is an odorless, yellowish, hygroscopic powder having a pungent and astringent taste.

Solubility.—The drug is soluble in 80 parts of alcohol and in 700 parts of water.

Therapeutic Applications.—The *Tannate of pelletierine* has been chiefly employed as an excellent and prompt tænicide.

Administration.—The remedy is best given in single doses of 23 grains (1.5 gramme) in about an ounce of water followed by a cathartic.

PENTAL.

This drug is the *Trimethylethylene* or the *Beta-iso-amylene,* the chemical composition of which is represented by this formula: $(CH_3)_2C.CH.,CH_3$.

Physical Properties.—*Pental* is a colorless liquid with a melting-point of 100.4° F. (38° C.) and a sp. gr. of 0.678. It is highly inflammable.

Solubility.—Pental is soluble in alcohol, ether, and chloroform, but insoluble in water.

Therapeutic Applications.—The use of pental is that of an anæsthetic, but as such it is not so efficient as ether or chloroform, and has a tendency to depress the circulation to a dangerous degree.

Administration.—The drug may be given by inhalation, but is best applied in the form of a spray as a local remedy in minor surgical operations.

PEREIRINE.

An alkaloidal principle obtained from the *Pao pereiro* so called, or the *Geissospermum lævæ*, belonging to the *Apocynaceæ*. No thorough chemical study of the alkaloid has been published. Two salts, the *Hydrochlorate* and the *Valerianate*, have been tried in practical medicine, especially the latter one.

Physical Properties.—The *Pereirine valerianate* occurs as a brown, crystalline powder.

Solubility.—The drug is freely soluble in alcohol, scarcely so in water, and insoluble in ether.

Therapeutic Applications.—The *Valerianate of pereirine* has been used, with asserted good results, as an antipyretic in diseases particularly of malarial origin.

Administration.—The remedy may be given in powder, in single doses of as high as 30 grains (2 grammes) a few hours before the expected paroxysm in the intermittent type of the disorder.

PHELLANDRIUM.

This plant, the *Phellandrium aquaticum*, recently introduced into practical therapeutics, has not been as yet thoroughly studied. Attention has been called, however,

to its medicinal virtues, having been found to be of value in diseases of the respiratory tract, such as bronchitis. It is claimed to be a specific sedative to the bronchial mucous membrane.

PHENACETINE.

This medicinal agent is a derivative of coal-tar. It is called also *Acetphenetidine* and *Phenacetinum*. Its chemical nature is represented by the formula of $C_6H_4OC_2H_5$-$NHCH_3CO$.

Physical Properties.—*Phenacetine* is a tasteless inodorous powder, made up of scaly crystals, having a melting-point of 275° F. (135° C.).

Solubility.—The drug is soluble in alcohol, more or less so in boiling water, but sparingly soluble in cold water and glycerine. Rectified spirit dissolves it in the proportion of 1 to 16 parts.

Therapeutic Applications.—Phenacetine is useful as an analgesic and antipyretic. It has been employed with apparent success in typhus and typhoid fevers, in phthisis, and other febrile disorders. Good results have been produced by it in the treatment of neuralgia, migraine, whooping-cough, and influenza. It is certainly of value in the insomnia caused by a high febrile state.

Administration.—The dose of phenacetine varies from 10 to 15 grains (0.65 to 1 gramme), or even as high as 90 grains (6 grammes). It is best given in cachets or suspended in mucilaginous fluids.

PHENIDIN.

This substance is allied to phenacetine, and is also known under the name of *Para-acetphenitidin*.

Physical Properties.—The remedy is lauded as a valuable analgesic, being considered superior to antipyrine.

Administration.—*Phenidin* is given in single doses of 15 grains (1 gramme), and may be repeated until 3 or 4 doses are taken.

PHENOCOLL.

This new antipyretic remedy, also closely allied to phenacetine, is obtained by the interaction of para-amidophenotoll and glycocoll, its formula being as follows:—

$$C_6H_4\begin{cases}OC_2H_5\\ NH,COCH_2NH_2\end{cases}+H_2O.$$

The drug used in practical medicine is the *Hydrochloride* or *Hydrochlorate*, and is then represented as

$$C_6H_4\begin{cases}OC_2H_5\\ NH,COCH_2NH_2HCl.\end{cases}$$

Physical Properties.—The salt occurs as a white, crystalline powder. The water compound melts at 203° F. (92° C.), but the anhydrous base requires a temperature of 212.9° F. (100.5° C.).

Solubility.—The drug is readily soluble in water and alcohol, but only barely so in chloroform, ether, and benzol.

Therapeutic Applications.—*Phenocoll hydrochlorate* has valuable therapeutic properties. It has produced excellent results as an antipyretic in febrile disorders such as typhoid, phthisis, and other pulmonary affections; as an antirheumatic in many of the acute forms of rheumatism; and as an antineuralgic, especially in cases of a hysterical nature. It has similarly been found beneficial in malaria and in influenza.

Administration.—The dose of *Phenocoll hydrochloride* is from 10 to 15 grains (0.65 to 1 gramme) four or five

times a day, and may be administered in the powdered form, in aqueous solutions, or in capsules.[1]

PHLORIDZIN.

A glucosidal principle obtained from the bark of the apple, pear, and other fruit trees. It is chemically constituted as follows: $C_{21}H_{24}O_{10}$.

Physical Properties.—The drug occurs in small, white, silky, crystalline needles, with a melting-point of from 222.8° to 226.4° F. (106° to 108° C.); at 226° F. (130° C.) it becomes solid, and again melts at from 338° to 339.8° F. (170° to 171° C.).

Solubility.—The remedy is soluble in hot water and alcohol.

Therapeutic Applications.—*Phloridzin* has been recommended as an antipyretic, but is not as such largely used. The drug is said to produce in animals artificial diabetes.

Administration.—The medicament may be given in daily doses of from 15 to 30 grains (1 to 2 grammes).

PHOTOXYLIN.

This substance, a nitro-cellulose, is obtained from wood-wool.

Therapeutic Applications.—*Photoxylin* is chiefly employed in plastic surgery, in solutions of the strength of from 3 to 5 per cent., made in mixtures of equal parts of alcohol and ether. It is said to be superior to collodion.

PHYTOLACCA.

The common name of poke-root is given to several species of *phytolacca*, of which the ones principally used in

[1] Other salts of phenocoll, such as the *Acetate*, the *Carbonate*, and the *Salicylate*, are found upon the market, but they have not been tried clinically as yet.

medicine, at present, are the *P. acinosa* and the *P. decandra*. No thorough studies have been made in regard to the chemical constitution of these plants.

Therapeutic Applications.—*Phytolacca* has purgative, emetic, and, to a certain extent, narcotic properties. The acinosa species has of late been recommended in dropsy. It has been tried with success in the treatment of mammary abscesses.

Administration.—The preparations used at present are a decoction and a fluid extract. Of the latter, the dose is put down as 10 minims (0.65 gramme), three times a day.

PICHI.

It is the *Fabiana imbricata* that is designated by the common name of *Pichi*, a plant belonging to the *Solanaceæ* family. The plant has not been examined thoroughly, but it is said to contain, besides many other principles, a crystallizable alkaloid termed *Fabianine*.

Therapeutic Applications.—*Fabiana* is lauded as an efficient remedy in affections of the urinary tract, such as acute and chronic vesical catarrh, uric acid diathesis, and others. It is said to increase the biliary secretion, and to be of service in jaundice and dropsy of hepatic origin.

Administration.—The only preparation used so far is a decoction made of the strength of 20 in 1000, the dose of which is from 2 to 3 cupfuls a day.

PICROTOXIN.

A principle obtained from the seeds of *Anamirta paniculata*. It is said to be also found in the fruit of *A. cocculus*. Its chemical constitution is given as being made of $C_{12}H_{16}O_7Aq$.

Physical Properties.—The drug occurs in brilliant, colorless needles.

Solubility.—The principle is soluble in alcohol, and somewhat so in water and ether.

Therapeutic Applications.—*Picrotoxin* has been prescribed against hysteria, epilepsy, spinal paralysis, and in chorea, in all of which affections it is said to have produced good results. It has similarly been recommended in the treatment of the night-sweats of phthisis. As a local remedy it has also been employed, with asserted success, in parasitic diseases of the skin.

Administration.—The dose of picrotoxin is put down as from $\frac{1}{100}$ to $\frac{1}{10}$ of a grain (0.00065 to 0.0065 gramme). Locally, an ointment of the strength of from 3 to 5 in 250 parts, may be employed.

PILIGANINE.

An active principle extracted from a plant belonging to the *Lycopodiaceæ*, known by the vulgar name of *Piligan*, the *Lycopodium saururus*. It is said to be contained also in another species, the *L. selago*.

Physical Properties.—*Piliganine* occurs as a yellowish, transparent mass, with a repugnant odor. It forms salts with the acids, the one best known of which is the *Hydrochlorate*.

Solubility.—The drug is soluble in water and chloroform ; partly so in ether.

Therapeutic Applications.—The *Hydrochlorate of piliganine* possesses emetic and cathartic virtues, but has chiefly been employed, though not extensively, against tænia and as an antispasmodic in the treatment of asthma.

Administration.—The dose of *piliganine hydrochloride* may be set down as from $\frac{1}{6}$ to $\frac{1}{3}$ of a grain (0.01 to 0.02 gramme).

PIPERAZINE.

Also termed *Piperazidine*; *Diethylendiamine*, *Dispermine*, and *Ethylenimine*, is obtained by the action of ammonia on bromide or chloride of ethylene, its chemical nature being represented by the formula of $C_4H_{10}N_2$.

Physical Properties.—The drug is a crystalline body, having a melting-point of from 219.2° to 224.6° F. (104° to 107° C.); it boils at 292° F. (145° C.). The aqueous solution is practically tasteless.

Solubility.—*Piperazine* is exceedingly soluble in water.

Therapeutic Applications.—The chief and most valuable use of *piperazidine* in medicine is as a solvent for uric acid and urate concretions, in which action it has, up to the present time, no rival as a medicament with this power. It is, undoubtedly, a most invaluable remedy in gout, rheumatic arthritis, and other similar affections. It has produced excellent results in the pruritus of the uric acid diathesis.

Administration.—The dose of piperazine is 15 grains (1 gramme). It may be administered by the stomach and subcutaneously. The remedy can also be applied locally in from 1 to 2 per cent. solutions mixed with water and spirit, 1 to 4 respectively.[1]

PIPERINE.

An alkaloidal principle obtained from the fruit of the *Piper nigrum*, or common black pepper. Its chemical composition is $C_{17}H_{19}NO_3$.

[1] *Beta-nitrophenylpiperazine*, with a melting-point of 264.2° F. (129° C.); *Diacetylpiperazine*, with a formula of CHN.2CHO, and a melting-point of 271.3° F. (138.5° C.), and other derivatives of piperazine, and allied compounds, have been prepared, but have not as yet been tried in practical medicine.

Physical Properties.—*Piperine*, when pure, is colorless and has practically no taste. It generally occurs as a yellowish resin, with a pungent taste.

Solubility.—The drug is readily soluble in sulphuric and acetic acids; somewhat soluble in alcohol, but insoluble either in cold or hot water or in ether.

Therapeutic Applications.—Piperine has been employed as an antipyretic and laxative; its use, however, has not been extensive.

Administration.—The dose of the remedy, given in powder or in pill-form, is from 1 to 10 grains (0.06 to 0.65 gramme).

PIPERONAL.

This drug is known also under the name of *Heliotropin*. It is obtained from *Piperic acid* by oxidation, and has this composition: $C_8H_6O_3$.

Physical Properties.—The substance appears in the form of small, white crystals.

Solubility.—*Piperonal* is soluble in alcohol and ether, but not in water.

Therapeutic Applications.—The remedy has been proposed as an antipyretic and antiseptic, but its use is not large, due probably to its high price. At present it is generally employed in the arts, especially in the manufacture of perfumery.

Administration.—Piperonal may be given in single doses of 15 grains (1 gramme).

PISCIDIA.

The vulgar name of Jamaica dogwood is given to *Piscidia erythrina*, the constituents of which have not so far been accurately determined.

Therapeutic Applications.—The plant possesses powerful sedative properties, considered, in many instances, superior to those of opium. It is a most valuable agent against irritation of the nervous centres, especially in those cases that will not tolerate the action of the papaver. The calmative and hypnotic effects of piscidia have been most beneficial in many forms of rebellious neuralgias.

Administration.—The best preparation of the plant now in vogue is the fluid extract, the dose of which is from ½ to 1 drachm (1.90 to 3.80 grammes).

PODOPHYLLOTOXIN.

This body is said to be the active principle of the common *May apple*, the *Podophyllum peltatum;* its chemical nature has not been investigated thoroughly as yet.

Therapeutic Applications.—The chief use of *podophyllotoxin* is that of a purgative and as a hepatic stimulant.

Administration.—The dose of the remedy varies from $\frac{2}{100}$ to $\frac{1}{10}$ of a grain (0.0054 to 0.006 gramme).[1]

POLYGONUM.

Many species of this plant have been found to possess medicinal virtues, especially the *Polygonum hydropiperoides* and the *P. punctatum.*

Therapeutic Applications.—*Polygonum* is considered an excellent emmenagogue, and as such it has been employed with the most satisfactory results.

Administration.—The preparation of polygonum used at present is the fluid extract, the dose of which is from 15 to 30 minims (0.95 to 1.90 gramme).

[1] A neutral crystalline principle, alleged to be the chief constituent of podophyllin, has been described under the name of *Picropodophyllin*, whose therapeutic properties are said to be similar to those of podophyllotoxin.

POTASSIUM TELLURATE.

This new salt of potassium is represented by the formula of K_2TeO_4.

Physical Properties.—The drug appears as a white, crystalline powder.

Solubility.—This salt is soluble in water.

Therapeutic Applications.—The *Tellurate of potassium* has been found quite effective as an antihydrotic in pulmonary consumption, but although the night-sweats are reduced and even arrested, the disease itself is not modified under the action of the drug.

Administration.—The remedy is best given at night, in pill-form or in alcoholic julep, in doses of from $\frac{1}{2}$ to $\frac{3}{4}$ of a grain (0.03 to 0.05 gramme).[1]

PYOKTANIN.

Two aniline dyes are known under the above term, the true *methyl-violet*, or *yellow pyoktanin*, and the so-called *blue pyoktanin*.

Physical Properties.—This substance occurs in the form of an odorless powder.

Solubility.—The drug is largely soluble in alcohol; it is soluble in 75 parts of cold and 50 parts of hot water.

Therapeutic Applications.—*Pyoktanin* has been extensively employed as a general antiseptic and as an efficient analgesic. It is said to be of value in diseases of the eye

[1] Other salts of potassium have recently been introduced. Of these there are: the white, crystalline *Auro-cyanide* ($KAuCy_4$) and the *Mercuric cyanide* (K_2HgCy_4), used as disinfectants; the *Cobalto-nitrite* ($K_6Co_2(NO_2)_{12},2Aq.$), composed of yellow crystals, recommended in cases in which the nitrites are indicated, such as cardiac dropsy, dyspepsia, etc.; and the *Osmate*, employed for the same purposes as Osmic acid (q. v.) itself.

and ear and in affections of the nose and throat. The drug is alleged to have produced good results in the treatment of malignant growths, injected subcutaneously, and in that of a large variety of neuralgias. It has rendered good service in gonorrhœa.

Administration.—The remedy is given by the mouth in doses of from 1 to 7½ grains (0.06 to 0.5 gramme), and even as high as 15 grains (1 gramme) a day. Hypodermatically, about ⅘ of a minim (0.05 gramme) of a 2 per cent. solution. For local use, watery solutions of the strength of 1 in 3000 or 1 in 1000, may be employed.

PYRAZOL.

This is the *Phenylmethylpyrazol-carbonic acid*, recently tried in practical medicine.

Therapeutic Applications.—The acid is said to possess a composition similar to antipyrine, yet it lacks antipyretic properties. Pyrazol has been used as a diuretic, and its effects are said to have been satisfactory.

Administration.—The dose of the remedy is from 15 to 30 grains (1 to 2 grammes).

PYRIDINE.

This substance, which must not be confounded with *Pyrodine* (Hydracetine), is obtained from bone-oil by the action of sulphuric acid. Its composition is represented by this formula: C_5H_5N. Bases of pyridine occur in tobacco smoke.

Physical Properties.—When pure, *pyridine* is a colorless liquid, with a peculiar odor and a pungent taste. It boils at 242.6° F. (117° C.); its sp. gr. at 32° F. (0° C.) is 0.9858.

Solubility.—The drug is readily soluble in water.

Therapeutic Applications.—*Pyridine* has given good results in the treatment of angina pectoris and asthma, and is said to be also an effective cardiac stimulant. Gonorrhœa is similarly stated to be benefited by this drug.

Administration.—Internally, the dose of the medicament is from 2 to 4 minims (0.12 to 0.24 gramme) thrice daily. It is best administered, however, by inhalation (1 to 1½ drachms—3.75 to 5.66 grammes—are placed on a dish in the room of asthmatic patients, a quantity which is evaporated in about 1 or 1½ hours). For local injections, as in gonorrhœa, the watery solution may have a strength of 1 in 300.

PYROCATECHIN.

This body is isomeric with resorcin, its formula being $C_6H_4(OH)_2$.

Physical Properties.—The drug occurs in the form of acicular crystals, having a melting-point of 219.2° F. (104° C.). It boils at from 464° to 473° F. (240° to 245° C.).

Solubility.—*Pyrocatechin* is soluble in water, alcohol, and ether.

Therapeutic Applications.—The remedy has been tried as an antipyretic, but its use has not become popular.

QUASSIIN.

A bitter principle extracted from quassia, the *Picræna excelsa*, being chemically constituted as follows: $C_{41}H_{42}O_9$.

Physical Properties.—*Quassiin* is a crystalline body.

Therapeutic Applications.—The remedy has been recommended as a stomachic tonic, and as a stimulant to digestion.

Administration.—The dose of quassiin is from $\frac{1}{30}$ to $\frac{1}{3}$ of a grain (0.002 to 0.02 gramme).

QUEBRACHINE.

An alkaloid obtained from the bark of the quebracho plant. The salt recently introduced into practical medicine is the *Hydrochloride*, with a formula of $C_{21}H_{26}N_2O_3,HCl$.

Therapeutic Applications.—The salt has been employed in the treatment of dyspnœa, with asserted success (see *Aspidospermine*).

Administration.—*Quebrachine hydrochloride* is administered by the mouth or hypodermatically in doses of from 1 to 2 grains (0.06 to 0.12 gramme).

QUEBRACHO.

The *Aspidosperma quebracho*, containing many active principles.

Therapeutic Applications.—The plant is chiefly employed as an antithermic.

Administration.—The powder is given in doses of from 4½ to 7½ grains (0.30 to 0.50 gramme); of the tincture ½ to 1 drachm (2 to 4 grammes).

QUINIDINE.

This alkaloid is extracted from several species of the cinchona bark, especially the *Cinchona pitayensis*. A salt that is now used in medicine is the *Tannate*, represented by this formula: $(C_{20}H_{24}N_2O_2)_2C_{27}H_{22}O_{17}$.

Therapeutic Applications.—The salt, destitute almost of any taste, has been highly recommended as a tonic in dyspepsia. It has also been successfully used in diarrhœa, albuminuria, and nephritis.

Administration.—The dose of the *Tannate of quinidine* is from 3 to 12 grains (0.18 to 0.72 gramme) twice or four times a day.

QUININE.

The new salts of this alkaloid are almost legion in number, but not one has claimed a special use in medicine. They have only been tried as substitutes for the chief principle of cinchona. Two of these salts, however, have of late been employed with apparent good results: The *Oleate*, occurring as a yellowish-gray mass, soluble in alcohol, and applied locally in the form of suppositories, and of ointments in the treatment of cutaneous affections; the *Salicylate*, appearing as a fine white powder, soluble in alcohol, but with difficulty in water; it possesses antiseptic and antipyretic properties, and is said to be of service in typhus and typhoid fevers, articular rheumatism and other febrile disorders. This salt is given in doses of from 1 to 8 grains (0.06 to 0.48 gramme).

QUINOIDINE.

Quinoidine is a mixture of amorphous alkaloids, resulting in the preparation of the active principles of cinchona.

Physical Properties.—The mixture occurs as a brownish-black mass having a nauseous taste.

Solubility.—The drug is soluble in water made slightly acid.

Therapeutic Applications.—*Quinoidine* is mainly employed as a substitute for quinine and in similar doses.[1]

[1] Two salts of quinoidine, the *Borate* and the *Citrate*, this latter appearing as a brown, hygroscopic substance, soluble in alcohol, glycerine, and the acids, and in hot water in the proportion of 1 to 2 parts, are also sometimes employed as substitutes for quinine.

From the *Quinia cuprea* an alkaloidal phenol has recently been extracted, *Cupreine* ($C_{19}H_{21}Az_2O,OH$). Two derivatives of this body are termed *Quinethyline* ($C_{13}H_{21}AzO,OC_2H_7$) and *Quino-propyline* or *Propylo-*

RANDIA.

This East Indian plant, the *Randia dumetorum*, has of late been claiming the attention of physicians as a therapeutic agent of some value. No thorough chemical study of it has yet been made, although it is said to contain valerianic acid and a glucosidal principle allied to *Saponin*.

Therapeutic Applications.—*Randia* has been employed especially as a nervine and an antispasmodic in those affections in which drugs of similar powers are indicated. It is used by the laity against dysentery, as a substitute for ipecacuanha. The plant is said to possess emetic properties.

Administration.—An *ethereal tincture* has been used in doses of from 15 to 60 minims (0.80 to 3.20 grammes) well diluted in water.

RESORCIN.

Also commonly called *Resorcinol*, is a dihydric phenol, or *Metadioxybenzene*, with a formula of $C_6H_4(OH)_2$.

Physical Properties.—The drug is a white, flocculent powder, made up of colorless or slightly yellowish, tabular crystals, having a faintly urinous odor and a sweetish, pungent taste. When pure, it has a melting-point of 230° F. (118° C.) and boils at 528.8° F. (276° C.).

Solubility.—The drug is readily soluble in 1½ parts of water, in alcohol, and ether; with difficulty in chloroform, benzene, or carbon disulphide.

Therapeutic Applications.—*Resorcin* is reputed to possess antiseptic and antipyretic properties. As an antiseptic it has been used in diseases of the stomach, in dysentery,

cupreine ($C_{19}H_{21}Az_2O,OC_9H_7$). All these new agents possess *antithermic* and *analgesic* properties, but have not as yet been largely used in practical medicine.

cholera infantum, and others. As an antipyretic, in febrile affections generally, such as typhoid fever, malaria, measles, etc., and especially in the hyperpyrexia of septicæmia, and in those febrile disorders attended with gastro-intestinal derangements. It has similarly been employed as a local remedy, with asserted success, in diseases of the upper air-passages; in gonorrhœa, diphtheria, croup, whooping-cough, cutaneous affections, and others. The drug is favorably spoken of as an antispasmodic against asthma, in which it is said to have produced good results.

Administration.—The dose of *resorcinol*, internally given, is from 1 to 2 grains (0.06 to 0.12 gramme). For local use, solutions of the strength of from 1 to 3 per cent. may be used, or ointments of the strength of 5, 10, or as high as 25 per cent.[1]

RETINOL.

This body, known likewise by the names of *Resinol* and *Rosinol*, is a distillation-product of the pine resin, with a formula of $C_{35}H_{16}$.

Physical Properties.—The drug appears as a thick, yellowish, oily liquid, having a melting-point of 460.4° F. (238° C.); its sp. gr. is 0.900.

Therapeutic Applications.—*Retinol* is a good antiseptic; but its chief uses at present are those of a solvent for substances such as aristol, camphor, cocaine, creasote, iodol, phenic acid, phosphorus, and salol, and many other similar drugs and alkaloidal bodies.

[1] *Resopyrin* is a combination of resorcin and antipyrine, the therapeutic properties of which are now being studied. Other derivatives and allied compounds of resorcin will be described under their respective names.

Administration.—Internally, the dose of *retinol* is 1 grain (0.06 gramme), and is best administered in capsules. Locally, it can be applied by itself or in the form of ointment.[1]

RHUS.

Poison sumach, poison oak, and *poison ivy* are common appellations by which *Rhus toxicodendron* is known.

Therapeutic Applications.—Of late this plant has been employed with success against chronic rheumatism, rheumatic gout, and certain forms of neuralgia, as, for instance, that following attacks of typhoid fever. The drug has also been recommended in the treatment of elephantiasis, and in that of scaly skin diseases. It is similarly said to be of great value as a brain and nerve stimulant.

Administration.—A *tincture* is the preparation employed at present, the dose of which is put down as ½ a minim (0.03 gramme) three or four times a day.

RUBIDIUM-AMMONIUM BROMIDE.

This double salt is represented by the formula of $RbBr.3NH_4Br$.

Physical Properties.—The drug occurs as a yellowish or whitish crystalline powder, with a saline taste.

Solubility.—The drug is readily soluble in water.

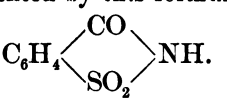
Therapeutic Applications.—The *Bromide of rubidium-ammonium* has been used as a sedative and hypnotic. It is claimed to be of service in the treatment of epilepsy, as a substitute for the potassium salt.

[1] A solution of phosphorus in retinol is best made as follows: Retinol is heated to dryness at a temperature of 212° F. (100° C.); it is then placed in a dry vial and allowed to cool, when 1 per cent. of the transparent, dry phosphorus is put into the liquid. A gentle heat and shaking are sufficient to produce a perfect solution.

Administration.—The daily dose of *rubidium-ammonium bromide* may be said to be from 60 to 90 grains (4 to 6 grammes), and is best given in syrup of lemon.

SACCHARIN.

Saccharin, similarly termed *Benzoyl-sulphonic imide*, *Gluside*, and *Glucusimide*, is a derivative of the aromatic series, and is represented by this formula :—



Physical Properties.—This substance occurs as a white powder, having an intensely sweet taste and an odor slightly resembling that of almonds.

Solubility.—The drug is soluble in alcohol in the proportion of 1 to 30 parts; in glycerine, dilute ammonia, and in solution of bicarbonate of sodium.

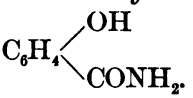
Therapeutic Applications.—*Saccharin* is employed as a sweetening agent for the food of diabetic patients, and as a corrective. It is likewise a good antiseptic, and is said to have produced marked benefit in the treatment of cystitis.

Administration.—The dose of saccharin is indefinite. For external application, as a mouth-wash, for example, the following combination may be used: to 10 grains (0.65 gramme) each of saccharin and bicarbonate of sodium, dissolved in 10 fluid drachms (37.25 grammes), are added 10 or 20 grains (0.65 or 1.30 gramme) of salicylic acid, and then enough spirit to make 1 ounce (30.00 grammes).

SALICYLAMIDE.

This amidogen compound, a derivative of salicylic acid, is chiefly obtained by the action of concentrated ammonia

upon methyl salicylate, or by the action of heat upon the salicylate of ammonium. *Salicylamide* has this formula :—



Physical Properties.—The drug, when pure, appears in the form of colorless, transparent plates, having a melting-point of 287.6° F. (142° C.), and being destitute of taste.

Solubility.—The remedy is soluble in alcohol, chloroform, and ether; in water in the proportion of 1 to 250 parts.

Therapeutic Applications.—*Salicylamide* is used for the same purposes as salicylic acid, and is said to be a safer and a more prompt and powerful analgesic than the latter medicament. It has thus been employed, with asserted good results, in the treatment of neuralgia and ovarian pains, and also in chronic rheumatism and follicular tonsillitis. The drug is likewise alleged to possess decided germicidal powers.

Administration.—The daily quantity of salicylamide to be administered may be put down as 15 grains (1 gramme), given in single doses of from 3 to 5 grains (0.18 to 0.32 gramme).

SALIPYRIN.

The name of *salipyrin* is given to a true salt, the *Salicylate of antipyrine*, obtained from the interaction of antipyrine and salicylic acid.

Physical Properties. — The salt appears as a white, odorless, crystalline substance, having a more or less agreeable taste. When crystallized from alcoholic solutions, it has a melting-point of 196.7° F. (91.5° C.).

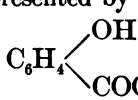
Solubility.—*Salipyrin* is freely soluble in alcohol and benzene; sparingly soluble in ether, and scarcely so in water.

Therapeutic Applications.—The remedy is claimed to be a good antipyretic and resolvent. It has been used with success against sciatica and in acute and chronic rheumatism. It is also said to have given satisfactory results in the treatment of influenza.

Administration.—The drug may be given in the form of the powder itself, in cachets or capsules. The single dose of salipyrin is 15 grains (1 gramme), and may be repeated until 90 grains (6 grammes) are taken.

SALOL.

Salol is phenic ether of salicylic acid, or *Salicylate of phenyl.* It is represented by this formula:—



Physical Properties.—The drug is a white, crystalline, tasteless powder, having a slight aromatic odor; it has a melting-point of from 107.6° to 109.4° F. (42° to 43° C.).

Solubility.—*Salol* is soluble in alcohol, ether, turpentine, sandalwood oil, copaiba balsam, and the fixed oils; it is insoluble in water.

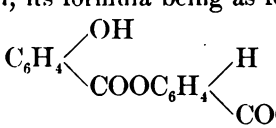
Therapeutic Applications.—Salol has decided antiseptic, antipyretic, and antirheumatic properties. It has been largely used as a substitute for the salicylates in the treatment of rheumatism. The drug is said to be of value in diseases of the urethra and bladder, such as gonorrhœa, cystitis, and others; and similarly in inflammatory affections of the pharynx and respiratory tract, such as colds in general, bronchitis, and catarrhal fever. The remedy

has been found serviceable against diarrhœa and other intestinal disorders of children. Salol has also rendered good service, locally applied, in the treatment of acute coryza, and in skin diseases, especially in eczema, impetigo, and sycosis. The medicament has been tried, with alleged good effect, in cholera Asiatica, yellow fever, and even in leprosy.

Administration.—Internally, the dose of salol, best given in cachets or suspended in milk, is from 5 to 30 grains (0.3 to 2 grammes), or even as high as 2 drachms (7.8 grammes) a day. Externally, the remedy may be employed as a dusting-powder (salol and chalk or starch equal parts, or 1 to 3) or in the form of a gauze, of ointment, collodion (4 to 4 of ether and 30 of collodion), and in alcoholic solution in the strength of from 5 to 10 per cent.[1]

SALOPHEN.

A derivative of salol, *Salophen* is said to be a *Salicylate of amidophenol;* it may be considered as salol in which an atom of hydrogen in the phenyl is replaced by the monivalent group. Salophen contains 50.9 per cent. of salicylic acid, its formula being as follows:—



Physical Properties.—The drug occurs in small, white lamellar crystals, without odor or taste, and having

[1] *Salolcamphor* is a mixture of salol and camphor, in the proportion of 3 to 2 parts. It occurs as a colorless, oily-like liquid, readily soluble in chloroform, ether, and the oils, but insoluble in water. This preparation has been highly recommended as a local application in the treatment of purulent inflammations of the middle ear.

a melting-point of from 368.6° to 370.4° F. (187° to 188° C.).

Solubility.—The drug is freely soluble in alcohol, alkali, and ether. Ferric chloride produces a violet color in the alcoholic solution.

Therapeutic Applications.—*Salophen* is employed as an excellent substitute for salol in all those affections for which the latter remedy is used. The derivative is said to be of special value in the treatment of acute rheumatic arthritis.

Administration.—The medicament is given in daily doses of from 1 to 1½ drachms (3.4 to 5.85 grammes).

SANGUINARINE.

An alkaloid extracted from the root of the common blood-root plant, the *Sanguinaria canadensis*. The salt of this alkaloid, recently tried in practical medicine, is the *Nitrate*, the composition of which is given as $C_{17}H_{15}NO_4HNO_3$.

Therapeutic Applications.—The *Nitrate of sanguinarine* has been used as a general tonic and stimulant, as an expectorant, and also as a purgative and emetic. The latter effects are only produced by comparatively large doses.

Administration.—The dose of *sanguinarine nitrate* varies from $\frac{1}{12}$ to $\frac{1}{8}$ of a grain (0.0054 to 0.0081 gramme). As an emeto-cathartic it may be given in quantities of from ½ to 1 grain (0.032 to 0.064 gramme).

SANTONIN-OXIM.

A derivative of santonin. It is obtained by the action of an alcoholic solution of hydrochlorate of hydroxylamine on santonin, and the addition of soda. Its formula is given as $C_{15}H_{18}O_2NOH$.

Physical Properties.—This new body appears in the form of a white, crystalline powder, having a melting-point of 323.6° F. (162° C.).

Solubility.—The drug is soluble in alcohol and ether; with difficulty in water.

Therapeutic Applications.—*Santonin-oxim* has been chiefly employed as a substitute for the mother-substance, to which it is claimed to be superior as an anthelmintic owing to its lack of poisonous properties.

Administration.—The dose of santonin-oxim varies from 1 to 5 grains (0.06 to 0.30 gramme) as follows: for a child 2 to 6 six years of age, 1 to 1½ grains (0.06 to 0.09 gramme); 6 to 9 years, 2 grains (0.12 gramme); for adults, 5 grains (0.30 gramme). The dose is to be divided into 2 parts, and given at intervals of from 1 to 2 hours, to be followed by a cathartic.

SCILLAIN.

A glucosidal principle extracted from species of the squill plant, chiefly the *Urginea scilla.*

Physical Properties.—*Scillain* is a yellowish or colorless powder. With hydrochloric acid it forms a red solution.

Therapeutic Applications.—The drug possesses, like the glucosides of digitalis, diuretic properties, and as such it has been used in a variety of disorders requiring activity of the renal organs.

Administration.—The single dose of *scillain* is $\frac{1}{60}$ of a grain (0.001 gramme). It may be given in amounts of from $\frac{1}{6}$ to $\frac{3}{4}$ of a grain (0.01 to 0.048 gramme) a day.

SCILLIPICRIN.

Another principle obtained from the *Urginea scilla.*

Physical Properties.—The drug occurs as a yellowish-white, amorphous, and quite hygroscopic powder.

Solubility.—*Scillipicrin* is readily soluble in water.

Therapeutic Applications.—The remedy, like scillain, is used as a diuretic in those cases in which the latter substance would be indicated.

Administration.—The single dose of scillipicrin is $\frac{1}{60}$ of a grain (0.001 gramme).

SCLEROTIC ACID.

This body is extracted from the *Claviceps purpurea,* and has a chemical composition of $C_{12}H_{19}NO_9$.

Physical Properties.—The acid appears in the form of a hygroscopic, odorless, and tasteless powder.

Solubility.—The drug is freely soluble in water, and sparingly so in alcohol.

Therapeutic Applications.—*Sclerotic acid* has been highly recommended in the treatment of epilepsy. Hypodermatically, it is said to act well as a substitute for ergot.

Administration.—The dose of sclerotic acid is $\frac{1}{2}$ a grain (0.03 gramme), or 5 grains (0.30 gramme), in the course of the day.

SCOPARINE.

This principle is extracted from the common broom-plant, the *Cytissus scoparius.*

Therapeutic Applications.—The chief properties of *Scoparine* are those of a diuretic, and as such it has been tried with apparent success.

Administration.—Internally, the dose of scoparine is from 8 to 15 grains (0.5 to 1 gramme); hypodermatically, ½ to 1 grain (0.03 to 0.06 gramme).

SCOPOLEINE.

Scopeleine is an alkaloidal principle obtained from the root of the *Scopolia japonica.*

Physical Properties.—The substance appears as a crystalline body.

Solubility.—The drug is freely soluble in alcohol, chloroform, and ether; slightly so in water.

Therapeutic Applications.—No extensive applications of this remedy have as yet been made in practical medicine, but it is asserted to stand in its action midway between atropine and hyoscyamine.

SODIUM.

The salts of this drug newly prepared and introduced into practical therapeutics, are legion in number, but only the most important of them will be described in the following paragraphs.

SODIUM AURO-CHLORIDE.

This substance is said to contain 30 per cent. of gold.

Physical Properties.—The *Auro-chloride of sodium* occurs as a golden-yellow powder which attracts moisture to a certain extent.

Solubility.—The salt is freely soluble in water, sparingly so in alcohol.

Therapeutic Applications.—*Sodium auro-chloride* has been mainly employed in the treatment of syphilitic disorders.

Administration.—The salt is best given in solution, or in the form of lozenges. The dose of it is from $\frac{1}{6}$ to 1 grain (0.01 to 0.06 gramme).

SODIUM DI-IODO-SALICYLATE.

The formula of this salt is $HO,C_6H_2I_2CO_2Na$.

Physical Properties.—The compound occurs in white needles.

Therapeutic Applications.—The *Di-iodo-salicylate of sodium* is used as an antiseptic, particularly in the treatment of parasitic diseases of the skin, but its employment seems to have been limited so far.

Administration.—The salt is applied locally as a dusting-powder.

SODIUM DI-THIO-SALICYLATE.

Physical Properties.—This salt appears as a grayish-white, very hygroscopic powder.

Solubility.—The drug is soluble in water in the proportion of 1 to 1.

Therapeutic Applications.—The *Di-thio-salicylate of sodium* has been found beneficial as an antiseptic and bactericide. It seems to have rendered good service in the treatment of gonorrhœal rheumatism and rheumatic fever. Locally, it has been successfully employed against ozæna.

Administration.—The internal dose of the remedy is 3 grains (0.20 gramme) twice a day.

SODIUM ETHYLATE.

This salt is represented by this formula: C_2H_5,NaO.

Physical Properties.—*Ethylate of sodium* is a brownish or whitish powder.

Solubility.—The salt is soluble in alcohol.

Therapeutic Applications.—This medicament is only used at present locally as an escharotic. It is generally applied in solution by means of a glass-rod.

SODIUM FORMATE.

This compound has the following formula: $NaCHO_2$,-H_2O.

Physical Properties.—The salt occurs as a white, crystalline, deliquescent powder.

Solubility.—The drug is soluble in water and glycerine.

Therapeutic Applications.—The *Formate of sodium* has been employed with apparent success in the treatment of tubercular affections.

Administration.—Internally, the dose of this remedy is $\frac{2}{5}$ to $1\frac{1}{5}$ grains (0.025 to 0.077 gramme).

SODIUM PARACRESOTATE.

This compound is represented by this formula: C_8H_7-NaO_3.

Physical Properties.—The salt appears in the form of a fine, white, crystalline powder having a bitter taste.

Solubility.—The medicament is soluble in about 24 parts of warm water.

Therapeutic Applications.—*Paracresotate of sodium* possesses antiseptic and antipyretic powers. The drug has been used successfully in the treatment of rheumatism and allied affections.

Administration.—The dose of *Sodium paracresotate* is 1 to 20 grains (0.06 to 1.3 gramme); as an antiseptic it is administered in amounts of from $\frac{1}{8}$ to $\frac{1}{4}$ of a grain (0.0081 to 0.0162 gramme).

SODIUM SOZOIODOLATE.

A salt that has this composition: $C_6H_2I_2(OH)SO_3Na$.

Physical Properties.—The compound appears in the form of colorless, well-defined prisms.

Solubility.—The *Sozoiodolate of sodium* has yielded good results as an antisyphilitic in the treatment of ulcers, and it is considered as superior in this respect to iodoform. The remedy is also serviceable in diseases of the bladder and in catarrhal affections of the nasal mucous membrane.

Administration.—*Sodium sozoiodolate* is employed as a dusting-powder or as an ointment made of 10 parts each of lanolin and paraffin to 2 parts of the sozoiodolate; or in solutions of the strength of 1 per cent.

SODIUM TELLURATE.

The "normal salt" so called is the *Tellurate of sodium*, a body composed of $Na_2TeO_4,5H_2O$.

Physical Properties.—This compound is a white powder.

Solubility.—The salt is soluble in water.

Therapeutic Applications.—The *Tellurate of sodium* is valuable in the treatment of the night-sweats of pulmonary phthisis.

Administration.—The remedy is best given in alcoholic mixtures, in single doses of from $\frac{2}{7}$ to $\frac{4}{5}$ of a grain (0.02 to 0.05 gramme), or in daily amounts of 1 grain (0.06 gramme).

SODIUM TETRABORATE.

The neutral *Tetraborate of sodium* is a body containing 50 per cent. of boric acid and 50 per cent. of sodium biborate.

Physical Properties.—The compound occurs in transparent, hard, clustered crystals, neutral in reaction.

Solubility.—The salt is soluble in water at 59° F. (15° C.) to the extent of about 16 per cent.; at 100.4° F. (38° C.) to that of 20 per cent.; and at 212° F. (100° C.) to that of almost 30 per cent.

Therapeutic Applications.—The *Tetraborate of sodium* is advantageous as an antiseptic agent, being considered superior to solutions of boric acid.

Administration.—The remedy is applied locally in solutions of the strength of 16 per cent.

SODIUM THIOPHENSULPHONATE.

This salt, which is a derivative of thiophen, contains 33 per cent. of sulphur, and is represented by this formula: $C_4H_3S—NaSO_3$.

Physical Properties.—The compound appears as a white, crystalline powder.

Therapeutic Applications.—The *Thiophensulphonate of sodium* has been employed successfully in skin diseases, particularly in prurigo, in which it has been found to be superior to beta-naphthol. The sodium salt may be used in cases in which this latter remedy fails to do any good.

Administration.—The medicament may be applied as a dusting-powder.[1]

[1] Among the other new salts of sodium may be mentioned: the *Chloroborate*, a white, crystalline powder, soluble in water; the *Gynocardate*, a yellowish-white substance, soluble in water and partly in alcohol; the *Silico-fluoride*, with a formula of NaF_2SiF_4, a white, crystalline powder, soluble in water in about one-half per cent.; and the *Sulphoricinate*, a brown liquid, of syrupy consistency, freely soluble in alcohol and water. All of these compounds have been recommended especially as antiseptics.

SOLANINE.

A glucosidal principle extracted from several plants belonging to the Solonaceæ, principally from the *Solanum nigrum*, the *S. vervascifolium*, and others. The drug has a chemical composition of $C_{42}H_{87}NO_{15}$.

Physical Properties.—*Solanine* is a powder made up of acicular crystals, having a melting-point of 455° F. (235° C.).

Solubility.—The glucoside is soluble in hot alcohol, somewhat soluble in ether, and with great difficulty in water.

Therapeutic Applications.—Solanine possesses analgesic properties, and as such it has been employed in the treatment of neuralgia, as a substitute for morphine. It has also produced satisfactory results in asthma, bronchitis, and in the vomiting of pregnancy.

Administration.—The remedy is best administered in powder or in pill-form, in doses of from $\frac{1}{6}$ to 1 grain (0.01 to 0.06 gramme). For hypodermatic injections the *Hydrochloride* has been used in similar amounts.

SOLUTOL.

This name is given to a combination of cresylic acid (cresol) and sodium cresylate. It contains in every $3\frac{3}{8}$ fluidounces (100 grammes) 2 ounces (60.4 grammes) of cresylic acid, of which one-fourth is in the free state and the other three-fourths combined as sodium salicylate.

Therapeutic Applications.—*Solutol* is mainly used as an antiputrefactive and disinfectant. It has been found of service in the disinfection of sputa, bed-clothing, excrements, water-closets, etc.

Administration.—Solutions of the strength of 0.5 per cent. are claimed to kill, within five minutes, all the bouillon cultures tested.

SOLVEOL.

This substance is a neutral concentrated solution of cresylic acid.

Therapeutic Applications.—The compound is employed, like the preceding, as an antiseptic, being, it is said, superior to carbolic acid. Solutions of *Solveol* of the strength of 0.5 per cent. are but slightly irritant.

Administration.—The drug is applied locally in the strength indicated.

SOMNAL.

An ethylated compound of chloral and urethane, being represented by this formula: $C_7H_{12}Cl_2O_3N$.

Physical Properties.—The medicament occurs as a clear, colorless liquid, having a hot, burning taste, resembling that of sweet spirit of nitre.

Therapeutic Applications.—*Somnal* has been employed chiefly, with alleged successful results, as a hypnotic.

Administration.—The remedy is best given in licorice-water or syrup of raspberry, in doses of from 15 to 30 minims (1 to 2 grammes).

SOZOIODOL.

This term is applied to the *Diiodparaphenolsulphonic acid*, obtained by the interaction of potassium paraphenol-sulphonate dissolved in dilute hydrochloric acid, and a solution of iodide and iodate of potassium. The formula of this substance, which contains 52.8 per cent. of iodine and 7 per cent. of sulphur, is as follows: $C_6H_2I_2OHSO_3H$.

Physical Properties. — The drug occurs in acicular prisms.

Solubility.—*Sozoiodol* is readily soluble in alcohol, water, and glycerine.

Therapeutic Applications.—The medicament has been employed as a general antiseptic in diseases of the skin, pharynx, and nose. It is said to be of value in venereal disorders, in affections of the stomach, and in rheumatism. The drug has been also extensively used in gynecology and surgery as a substitute for iodoform.

Administration. — Sozoiodol is applied as a dusting-powder, in the form of gauze, or as a collodion and solution of the strength of from 5 to 20 per cent.

SPARTEINE.

An alkaloidal principle obtained from the broom-plant, the *Cytissus scoparius* or *Sarothamnus* (?) *scoparius*. The chemical composition of the alkaloid is $C_{15}H_{26}N_2$.

Physical Properties.—The drug appears as an oily, volatile, unstable liquid, with an odor resembling that of pyridine, and a bitter taste. It has a melting-point of 550.4° F. (288° C.). The *Sulphate*, the chief salt used in practical medicine, occurs as a transparent, colorless, crystalline powder.

Solubility.—The salt is freely soluble in water in the proportion of 2 to 3 parts, and in alcohol.

Therapeutic Applications.—The remedy is alleged to be of service as a cardiac tonic, its action resembling that of digitalis. It has thus been used as a diuretic in diseases of the heart, as a substitute for this latter medicament.

Administration.—The *Sulphate of sparteine* may be given in single doses of from ½ to 2 grains (0.03 to 0.12 gramme).

SPERMINE.

A substance extracted from the seminal fluid of various animals, the chemical composition of which is said to be C_2H_5N.

Physical Properties.—*Spermine* occurs as a crystalline body.

Therapeutic Applications.—Spermine has been highly lauded in the treatment of nervous disorders, chiefly cerebral depression and general and senile debility. It is asserted to have produced good results also in diabetes mellitus, in collapse, and even in pulmonary tuberculosis.

Administration.—The substance is best administered subcutaneously.

STENOCARPINE.

Also known under the name of *Gleditschine.* It is an alkaloid obtained from several species of acacia, particularly the *Acacia stenocarpo,* and likewise from the *Gleditschia triacanthos.*

Therapeutic Applications.—The drug appears to have anæsthetic properties similar to those of cocaine, and it has, to a limited extent, so far, been employed locally as a substitute for this latter alkaloid.

STRONTIUM BROMIDE.

This salt is represented by the formula of $SrBr_2,6Aq$.

Physical Properties.—The salt is composed of long, colorless needles.

Solubility.—*Bromide of strontium* is freely soluble in water.

Therapeutic Applications.—*Strontium bromide* has been used with apparent success in super-acid diseases of the

stomach, and in the treatment of epilepsy. The salt has similarly been found beneficial against rheumatic gout.

Administration.—The daily dose of the remedy is from 30 to 60 grains (2 to 4 grammes). As high as 6½ drachms (25.20 grammes) may be given in a case of epilepsy.

STRONTIUM LACTATE.

The *Lactate of strontium* has this composition: $Sr(C_3H_5O_3)_2$, 3Aq.

Physical Properties.—The compound appears as a white granular powder.

Solubility.—The salt is soluble in water.

Therapeutic Applications.—*Strontium lactate* has been recommended especially in chronic diseases of the kidneys, in which the albumen of the urine is said to be notably diminished, and even suppressed under the influence of the medicament.

Administration.—The daily dose of this salt may be put down as from 2 to 2½ drachms (8 to 10 grammes).[1]

STROPHANTHINE.

A glucosidal principle extracted from the seeds of several species of the strophanthus plant, chiefly the *Strophanthus hispidus*. *Strophanthine* has this formula: $C_{16}H_{26}O_8$.

Physical Properties.—The principle appears as a white, amorphous or crystalline powder, having an intensely bitter taste.

Solubility.—The drug is readily soluble in water and alcohol.

[1] Two other salts, the *Phosphate* and the *Orthophosphate* of strontium, are at present being tried in medicine, but the results have not been sufficiently reported to draw any conclusions as regards their therapeutic value.

Therapeutic Applications.—The remedy has been used largely as a heart tonic, mainly as a substitute for digitalis, and particularly in those cases in which this latter drug fails to act.

Administration.—The daily dose of strophanthine is put down as from $\frac{1}{60}$ to $\frac{1}{30}$ of a grain (0.001 to 0.002 gramme). Hypodermatically, it may be given in doses of $\frac{1}{160}$ to $\frac{1}{100}$ of a grain (0.0003 to 0.0006 gramme).

STRYCHNINE.

The salt of this drug lately tried in practical therapeutics is the *Arseniate.* It is represented by the formula of: $C_{21}H_{22}N_2O_2,As$.

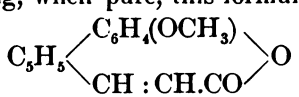
Physical Properties.—The *Arseniate of strychnine* occurs as a white, crystalline powder, having, like the alkaloid itself, a very bitter taste.

Therapeutic Applications.—This salt has mainly been employed as a tonic and diuretic. It has been tried, with apparent benefit, in the treatment of pulmonary phthisis.

Administration.—*Strychnine sulphate* is best given from a $\frac{1}{2}$ per cent. solution made in liquid vaseline, the daily dose of it being from 4 to 15 minims (0.24 to 0.92 gramme).

STYRACOL.

When guaiacol and cinnamyl chloride are heated together, they give rise to the formation of a body, *Styracol,* so called, having, when pure, this formula :—



Physical Properties.—The mass occurs in the form of a crystalline powder, composed of needles, having, if pure, a melting-point of 284° F. (140° C.).

Therapeutic Applications.—*Styracol* has been employed as an antiseptic in the treatment of tuberculosis, as a substitute for guaiacol. The medicament is said to be of service, internally administered, in diseases of the gastro-intestinal tract, and similarly in gonorrhœa and chronic vesical catarrh.

STYRON.

A compound of Balsam of Peru and liquid storax.

Therapeutic Applications.—The drug has been used locally as an agreeable dressing and deodorizer over ulcerating surfaces. It has given relief in phthisis. The drug is said to act upon the bacillus of cholera in such a manner as to be thought of service in this malady. It has been tried with most favorable results as an antiseptic.

Administration.—Locally, *Styron* is employed in solution of the strength of 8 per cent.; for introduction into pleural and peritoneal cavities in solutions in water of the strength of from 1 to 50, 1 to 100, or 1 to 200, as the case requires. For a spray it is used in the strength of 4 per cent.

SULPHAMINOL.

Sulphaminol is the name applied to *Thioxydiphenylamine*, obtained by the action of sulphur on the salts of meta-oxydiphenylamine.

Physical Properties.—The drug appears as a pale-yellow, odorless and tasteless powder, having a melting-point of 311° F. (155° C.). The solutions are of a pale-yellow color.

Solubility.—Sulphaminol is freely soluble in alkalies, alcohol, and acetic acid; it is insoluble in water.

Therapeutic Applications.—Thioxydiphenylamine possesses good antiseptic properties, and has been employed as a substitute for iodoform, with favorable results, in the treatment of wounds, ulcers, and other similar disorders. It has been especially used in rhinological practice. Internally, it has been found beneficial in cystitis.

Administration. — Sulphaminol is given in single or daily doses of 4 grains (0.24 gramme), and 15 grains (1 gramme), respectively. It is generally applied, however, as a dusting-powder.[1]

SULPHONAL.

This is the *Diethylsulphon-dimethyl-methane*, obtained by the interaction of anhydrous mercaptan and anhydrous acetone, in the presence of hydrochloric acid gas. The formula of the drug is as follows: $(CH_3)_2C(SO_2C_2H_5)_2$.

Physical Properties.—*Sulphonal* is a colorless, odorless substance made up of prismatic crystals, melting at from 257° to 258.8° F. (125° to 126° C.).

Solubility.—The drug is soluble in alcohol and ether; also in 100 parts of cold, and in 20 to 15 parts of boiling water.

Therapeutic Applications. — The chief properties of sulphonal are those of a hypnotic. As such it has been extensively used in a variety of nervous disorders whose principal symptom is sleeplessness, with or without the existence of pain. The medicament has likewise been recommended in the treatment of diabetes mellitus.

[1] Derivatives of sulphaminol, such as *Sulphaminol-creasote*, *S.-eucalyptol*, *S.-guaiacol*, and *S.-menthol*, are being tried at present in the treatment of laryngeal tuberculosis and rhino-laryngology.

Administration.—The dose of the drug is from 15 to 30 grains (1 to 2 grammes), and is best administered in capsules, wafers, or in mucilage of acacia.

TANGHININE.

A principle extracted from the *Tanghinia venenifera;* its chemical constitution has not as yet been definitely established; it is said to be wanting in nitrogen.

Physical Properties.—The drug occurs as a crystalline body, and melts at a temperature of 359.6° F. (182° C.).

Solubility.—*Tanghinine* is soluble in alcohol and ether, and in water in the proportion of 1 to 100 parts.

Therapeutic Applications.—Although resembling strophanthine and ouabaïne in its action, *tanghinine* has not been so far employed in practical medicine.

TEREBENE.

A mixture of several terpenes, resulting from the distillation of the oil of turpentine with sulphuric acid. *Terebene* is represented by the formula of $C_{12}H_{16}$.

Physical Properties.—This body appears as a yellowish liquid, with an odor likened to that of thyme.

Solubility.—The liquid is readily soluble in water, less so in alcohol, and almost insoluble in water.

Therapeutic Applications.—*Terebene* is a useful medicament as a stimulant expectorant, and as such it has been tried with good results in the treatment of chronic bronchitis and hay-asthma. Locally, it is said to be beneficial in wounds.

Administration.—The remedy is best given in emulsion or capsules in doses of from 4 to 6 minims (0.24 to 0.36 gramme) every 3 or 4 hours. Externally, it may be applied in solution of the strength of 5 per cent.

TERPINE.

The *Hydrate of terpine* is obtained by the interaction of 4 parts of the oil of turpentine, 1 part of nitric acid, and 3 parts of alcohol at 176° F. (80° C.). It is represented by this formula: $C_{10}H_{18}(OH)_3$,Aq.

Physical Properties.—*Terpine* appears in the form of white, rhombic crystals, without odor, and having a slightly aromatic taste. Its melting-point is from 240.8° to 242.6° F. (116° to 117° C.).

Solubility.—Terpine is soluble in 10 parts of alcohol, 32 parts of boiling and in 250 parts of cold water; and to some extent in carbon disulphide, benzene, and turpentine.

Therapeutic Applications.—The remedy has antiseptic and expectorant properties. It has been employed successfully in subacute and chronic bronchitis and whooping-cough. The drug has similarly been recommended as a diuretic against chronic inflammation of the kidneys.

Administration.—As an expectorant the dose of terpine is from 2 to 3 grains (0.12 to 0.18 gramme). In chronic nephritis it may be given in from 5 to 6 grains (0.30 to 0.36 gramme), and in whooping-cough in from 20 to 40 grains (1.3 to 2.6 grammes). It is best administered in tablets or in alcoholic and syrupy mixtures.

TERPINOL.

By boiling together terpine and water acidulated with hydrochloric or sulphuric acid, *Terpinol* is obtained. It is a mixture of terpines.

Physical Properties.—This agent occurs as a colorless, oily liquid, with an odor resembling that of jasmine, and having a sp. gr. of 0.852.

Solubility.—The drug is soluble in alcohol and ether, *but insoluble* in water.

Therapeutic Applications.—Like terpine, *terpinol* possesses expectorant and stimulant properties, and has been used with benefit in the treatment of bronchitis.

Administration.—The remedy is best given in capsules or in pill-form, alone or in combination with the benzoate of sodium. The dose of terpinol is from 10 to 15 minims (0.60 to 0.90 gramme).[1]

TETRONAL.

This term is applied to *Diethyl-sulphon-diethylmethane*, which is represented by this formula: $(C_2H_5)_2.C.(SO_2C_2H_5)_2$.

Physical Properties.—*Tetronal* appears in the form of brilliant scales, which melt at 185° F. (85° C.), having a bitter taste and a slight camphor-like odor.

Solubility.—This substance is soluble in about 450 parts of water; in alcohol in the proportion of 1 to 5 parts.

Therapeutic Applications.—Tetronal is chiefly used at present as a hypnotic.

Administration.—The dose of the remedy is from 10 to 20 grains (0.6 to 1.2 gramme) twice or thrice daily. It is best given in cachets or capsules.

THALLINE.

This compound, obtained by heating together para-amidoanisol and acrolein, in the presence of some oxidizing agent, is the *Tetra-hydroparamethyloxychinoline* or *Tetra-hydroparachinonisol*, whose chemical constitution is represented by the formula of $C_9H_{10}N(OCH_3)$.

Physical Properties.—*Thalline* is a liquid at ordinary temperatures, but when cooled appears in the form of a

[1] *Terpineol* ($C_{10}H_{17}OH$) is the name given to a colorless liquid with a bitter taste; sp. gr. 0.940; it is recommended as a deodorizer.

yellowish-white, crystalline powder, having a saline, bitter taste, and an odor resembling that of coumarin bean.

Solubility.—The medicament itself is soluble in water in the proportion of 1 to 5 parts. The two chief salts used in medicine, the *Sulphate* and the *Tartrate*, are both soluble in water in the proportion of 1 to 7 and 1 to 10 parts respectively, and slightly soluble in alcohol.

Therapeutic Applications.—The salts are employed in practical medicine, though not very extensively, as germicides and antipyretics. They have been used, with apparent success, in the treatment of gonorrhœa.

Administration.—Either salt is given in doses of from 2 to 4 grains (0.12 to 0.25 gramme), and even as high as 8 grains (0.50 gramme). For injections in gonorrhœa, the *sulphate* may be applied in 1½ per cent. solutions by itself, or in combination with tannin and nitrate of silver. Bougies may be employed, smeared in an ointment made with cacao butter, of the strength of 2 per cent.

THEOBROMINE.

This alkaloidal body is extracted from the cacao plant, the *Theobroma cacao*, and has a composition of $C_7H_8N_4O_2$.

Physical Properties.—*Theobromine* occurs as a colorless, crystalline powder, having a bitter taste.

Solubility.—The alkaloid is soluble in alcohol and ether, and slightly so in water.

Therapeutic Applications.—The drug possesses properties similar to those of thein and caffeine, but is not generally used in medicine by itself on account of its insolubility. There are two principal salts used, one known by the name of *Diuretin* (q. v.), and the other, also a double compound, will be presently described.

THEOBROMINE AND LITHIUM SALICYLATE.

This double salt, unlike its sister theobromine compound, *Diuretin*, has not as yet been studied thoroughly as a chemical body.

Physical Properties.—The salt occurs as a white powder.

Solubility.—The compound is soluble in about 5 parts of water.

Therapeutic Applications.—The *Salicylate of theobromine and lithium* has been employed, with alleged beneficial results as a diuretic, especially in the treatment of cardiac dropsies.

Administration.—The dose of *theobromine and lithium salicylate* is set down as 15 grains (1 gramme) four times a day.

THERMIFUGIN.

This substance is the *Carbamate of sodium*, and is also termed *Methyl-trihydro-oxyquinoline*. The drug is thus chemically represented: $C_9H_8(CH_3)NCOONa$.

Physical Properties.—*Sodium carbamate* occurs as a slightly yellowish-white salt.

Solubility.—It is taken up by water, giving to the solution a brownish color.

Therapeutic Applications.—*Thermifugin* has not been tried extensively in practical medicine, but is said to possess antipyretic properties. Further researches, however, are wanting before its proper uses and dose can be determined.

THILANINE.

This new dermic agent is a sulphuretted lanolin, containing 3 per cent. of sulphur.

Physical Properties.—The medicament occurs as a yellowish-brown unctuous substance, having the consistency of lanolin.

Therapeutic Applications.—The remedy is claimed to be advantageous in the treatment of cutaneous affections, principally in the acute and subacute forms of facial eczema, chronic and scaly eczema of the legs, papulo-vesicular eczema of the hands, and in other forms of this disease. It has similarly been tried, with apparent beneficial results, in sycosis vulgaris, chrysarobin dermatitis, and other disorders of the skin.

Administration.—Thilanine is locally applied.

THIOL.

A mixture of sulphated hydrocarbons.

Physical Properties.—This medicinal agent occurs in two forms: a liquid one, and as a fine brown powder. Liquid thiol is a thin, brownish-black extract with a sp. gr. of from 1.080 to 1.082 at 59° F. (15° C.).

Solubility.—*Thiol* is soluble in water, especially in the presence of glycerine.

Therapeutic Applications.—The medicament is, like ichthyol, employed in diseases of the skin, such as acne, eczema, erythema, erysipelas, lymphangitis, sycosis, and others. It has been recommended in the treatment of joint-infiltrations, subcutaneous hemorrhages, chilblains, and periphlebitis. The drug is alleged to have done good in syphilitic and scrofulous ulcers; in rheumatism, in lupus, endometritis, and pelvic exudations in general.

Administration.—Internally, the dose of thiol is about 1½ grains (0.09 gramme), best given in pill-form, or in wine and chocolate solutions of the strength of from 1 to 2 per *cent.* Locally, it is usually applied in powder-form, or in

collodion in the strength of 5 per cent. of the powder; as an ointment, in that of 10 per cent. of the liquid; or in glycerine and aqueous solutions of the strength varying from 10 to 50 per cent. of the powder.

THIOPHEN.

A sulphur-holding hydrocarbon; a benzol product closely allied to pyrrol, and having a formula of C_4H_4S.

Physical Properties.—The agent appears as a colorless, clear, volatile oil, having a boiling-point of 183.2° F. (84° C.).

Solubility.—The drug is insoluble in water.

Therapeutic Applications.—*Thiophen* itself has not so far been used in practical medicine, but it has been employed in the form of the *Sodium thiophensulphonate* and *Diiodide of thiophen*, to be presently described.

THIOPHEN DIIODIDE.

This derivative of thiophen, which contains 9.5 per cent. of sulphur, is represented by this formula: $C_4H_2I_2S$.

Physical Properties.—The compound is a crystalline body and appears in the form of beautiful tablets, volatile at ordinary temperatures, and having a melting-point of 104.9° F. (40.5° C.).

Therapeutic Applications.—The *Diiodide of thiophen* has been employed as an antiseptic in diseases such as bursitis, carcinoma, mastitis, and in a variety of surgical affections, especially those in which iodoform is indicated.

Administration.—The medicament may be applied as a dusting-powder or in the form of gauze.

THIOPHEN-SODIUM SULPHONATE.

This compound salt contains 33 per cent. of sulphur, its formula being as follows: $C_4H_3S—NaSO_3$.

Physical Properties.—The drug occurs as a white, crystalline powder.

Therapeutic Applications.—The *Sodium thiophensulphonate* has been employed with success in prurigo, in which the remedy is said to be superior to beta-naphthol. It may be employed in those cases in which this remedy is contraindicated.

Administration.—It may be applied as a dusting-powder.

THIORESORCIN.

A product of varied action in combination with resorcin, sodium hydrate, sulphur, and hydrochloric acid; a body represented by the formula of $C_6H_4(OS)_2$.

Physical Properties.—This body appears in the form of a grayish, flocculent powder, odorless, tasteless, and non-irritating.

Solubility.—The medicament is slightly soluble in alcohol and ether; insoluble in water.

Therapeutic Applications.—The chief use of *Thioresorcin* is as an antiseptic. It is employed as a substitute for iodoform, especially in the treatment of ulcers of the leg.

Administration.—The remedy is usually applied as a dusting-powder.

THYMACETIN.

A derivative of thymol. It is closely allied to phenacetine, and its chemical formula is as follows:—

$$C_6H_2,CH_3,C_3H_7\begin{cases}OC_2H_5\\NH(C_2H_3O)\end{cases}$$

Physical Properties.—The drug is a white, crystalline powder.

Solubility.—*Thymacetin* is slightly soluble in water.

Therapeutic Applications.—The remedy is credited with analgesic and hypnotic properties. It has been employed successfully in nervous and mental disorders, such as nervous headaches not due to organic disease.

Administration.—The dose of thymacetin may be put down as from 3¾ to 14 grains (0.25 to 1 gramme). As a hypnotic it may be administered in amounts of 7½ grains (0.5 gramme).

THYMOL.

This body is obtained from the volatile oils of thyme, the *Thymus vulgaris* or *serpillum*, and other allied plants. It is represented in this manner: $C_{10}H_{13}HO$.

Physical Properties.—*Thymol* occurs in liquid form or in acicular crystals.

Solubility.—Thymol is soluble in the fatty and essential oils; insoluble in water.

Therapeutic Applications.—The drug possesses antiseptic properties. It has been employed internally in gastric fermentation and other disorders; in typhus fever, and in rheumatism. It has produced good results in the treatment of wounds, mouth affections, and toothache, and in that of skin diseases. In the form of inhalations it is highly serviceable in bronchitis, pulmonary gangrene, and whooping-cough. Thymol has been tried, with alleged beneficial results, as an antipyretic.

Administration.—The usual dose, internally administered, varies from 1 to 2 grains (0.06 to 0.12 gramme). As an antipyretic it may be given in amounts of from 5 to 15 grains (0.30 to 1 gramme). Locally, the drug is employed in solutions of the strength of from 1 to 10 in 1000; or in the form of ointment of the strength of from 1 to 5 per cent.

TRICHLORACETIC ACID.

Therapeutic Applications.—This substance has recently been introduced as an escharotic in venereal and cutaneous affections, and as such it has given good results.

Administration.—The acid is locally applied.

TRIMETHYLAMINE.

This body is said to be an ammoniacal base found in cod-liver oil and ergot. It is also called *Secalin.*

Physical Properties.—The drug appears in the market in the form of solution.

Solubility.—*Secalin* is soluble in water.

Therapeutic Applications.—*Trimethylamine* is credited with antirheumatic properties, and as such it has been used with asserted beneficial results.

Administration.—The dose of this remedy is put down as from 20 to 40 minims (1.25 to 2.50 grammes).

TRIONAL.

The term *Trional* is applied to the *Diethylsulphon-methyl-ethyl methane,* which, like tetronal, is a derivative of sulphonal. The chemical composition of trional is represented as follows: $C_2H_6CH_3C,(SO_2C_2H_5)_2$.

Physical Properties.—The drug crystallizes in brilliant scales, having a somewhat bitter taste. It melts at 168.5° F. (76° C.).

Solubility.—*Trional* is readily soluble in alcohol and ether; in water only in the proportion of 1 to 320 parts.

Therapeutic Applications.—The medicament is mainly used as a hypnotic in nervous disorders, especially in the insomnia of the insane. Its action resembles that of the allied compound tetronal.

Administration.—The dose of trional is from 10 to 20 grains (0.6 to 1.3 gramme), and even as high as 60 grains (4 grammes) may be given.

TUBERCULIN.

An extract, also known by the name of "Koch's lymph" (from its discoverer), obtained by means of glycerine from pure cultures of the tubercle bacillus. Its true chemical nature has not as yet been definitely determined.

Physical Properties.—The extract occurs as a transparent liquid, of a yellowish color, and apparently only stable in concentrated solution.

Therapeutic Applications.—The remedy has been employed in the treatment of tubercular disease in general and especially in bone tuberculosis, but with varying success. It has given the best results, so far, as a diagnostic agent for the tuberculous diathesis.

Administration.—The initial dose of *Tuberculin* is put down as from $\frac{1}{200}$ to $\frac{1}{130}$ of a grain (0.0003 to 0.0005 gramme), hypodermatically injected, the amount being gradually and carefully increased.[1]

TUMENOL.

By this name is designated a sulphonated preparation of hydrocarbons, allied to thiol, obtained from mineral oils by the action of fuming or concentrated sulphuric acid.

Physical Properties.—*Tumenol* appears in the form of

[1] *Tuberculocedin* or *tuberculocidin* is an albumose isolated from crude tuberculin, and is said to act specifically upon the tubercle bacillus without producing febrile symptoms or tissue-necrosis. This agent is still under consideration; so far, it has been found to be superior to the original lymph.

a dark-brown or a blackish-brown liquid, of a syrupy consistency. The preparation known as *Tumenol sulphonic acid* is a dark powder, having a peculiar bitter taste.

Therapeutic Applications.—Tumenol is valuable in skin affections, such as eczema, impetigo, prurigo, pruritus, and others.

Administration.—Locally, it is applied in the strength of 5 to 10 per cent. in solutions in ether, rectified spirit, or glycerine. The *Tumenol sulphonic acid* is applied as a dusting-powder, or it may be employed in solutions of the strength of from 2 to 5 per cent.

URALIUM.

This drug, also known as *Ural*, or *Chloral-urethane*, is, as the latter name indicates, a compound of chloral and urethane, obtained by treating a combination of these drugs with concentrated hydrochloric and sulphuric acids. The body resulting is represented by this formula: CCl_3-$CH,OH,NHCO_2C_2H_5$.

Physical Properties.—Ural occurs as a crystalline body, having a melting-point of 217.4° F. (103° C.).

Solubility.—The drug is freely soluble in alcohol and ether; it is insoluble in cold water.

Therapeutic Applications.—*Chloral urethane* has been highly recommended as a hypnotic, and is alleged to be in this respect superior to chloral.

Administration.—The remedy may be given in doses of from 15 to 45 grains (1 to 3 grammes).

URETHANE.

A carbonate of ethylic ether, also called *Ethyl urethane*, obtained by the interaction of nitrate of urea and ethylic

alcohol at a temperature of from 248° to 269° F. (120° to 130° C.). Its formula is as follows: $CO\begin{matrix}NH_2\\OC_2H_5\end{matrix}$.

Physical Properties.—The substance occurs in crystalline, odorless masses, having a taste resembling that of saltpetre. It melts at from 116.6° to 122° F. (47° to 50° C.), and its boiling-point varies from 338° to 356° F. (170° to 180° C.).

Solubility.—*Urethane* is soluble in 1 part each of water and ether, $\frac{6}{10}$ of alcohol, $1\frac{3}{10}$ of chloroform, and $\frac{3}{10}$ of glycerine.

Therapeutic Applications.—*Ethylic urethane* has been lauded as a sedative and hypnotic. It has apparently given good results in the treatment of mental diseases, and particularly in nervous disorders of children, such as tetanus. The remedy is alleged to possess antidotal powers against convulsant poisons; at present its chief use is as a hypnotic.

Administration.—The dose of urethane is from 15 to 45 grains (1 to 3 grammes), and even as high as 60 grains (4 grammes) may be given. Hypodermatically, it may be administered in amounts of 4 grains (0.25 gramme).

URTICA.

This plant, commonly known as the stinging-nettle, is the *Urtica dioica* of the family of the *Urticeæ*. No thorough chemical analysis has been made of it.

Therapeutic Applications.—This drug, recently introduced, is said to be one of the best diuretics known, and is also credited with hæmostatic properties. It has been used in the treatment of dropsies and hemorrhages with apparent success.

Administration.—Urtica is administered in the form of infusion or tincture; locally, as an ointment.

VANILLIN.

A body obtained from the vanilla plant, the *Vanilla planifolia*. The principle is said to occur similarly in many beet sugars and in the wood of various plants. The composition of vanillin is as follows: $C_6H_3OH,-OCH_3CHO$.

Physical Properties.—The drug appears in the form of acicular crystals, with an odor and taste resembling those of vanilla, and having a melting-point of 176° F. (80° C.). It boils at a temperature of 545° F. (285° C.).

Solubility.—*Vanillin* is soluble in alcohol, chloroform, and ether; less so in water.

Therapeutic Applications.—The drug is recommended as a stimulant and tonic in the treatment of dyspepsia.

VERNONIA.

This plant is the *Vernonia nigritiana*, said to contain a glucosidal principle termed *Vernonine*.

Therapeutic Applications.—The plant is credited with febrifuge properties, but its use in practical medicine has not as yet been extensive.

VIBURNUM.

The *Viburnum prunifolium*, the botanical name of this plant, has not been analyzed chemically.

Therapeutic Applications.—*Viburnum* is said to be an excellent uterine sedative. It has been found serviceable in the treatment of dysmenorrhœa, threatened abortion, and allied disorders.

Administration.—A tincture of the drug is given in doses of from ½ to 1 drachm (1.9 to 3.8 grammes) every four hours.

VIEIRIN.

A principle extracted from the bark of the *Remijia vellozii*, a plant belonging to the *Rubiaceæ*.

Physical Properties.—*Vieirin* is an amorphous powder, having a bitter taste and aromatic odor. It melts at a temperature of 248° F. (120° C.).

Solubility.—The drug is freely soluble in alcohol and chloroform.

Therapeutic Applications.—The remedy is employed as a general tonic, and in the treatment of malarial and other febrile affections as a substitute for quinine.

Administration.—The dose of vieirin varies from 1 to 3 grains (0.06 to 0.18 gramme), repeated during the day, as required.

WRIGHTINE.

The bark of the plants known botanically as the *Holarrhena antidysenterica* and *Wrightia antidysenterica* contains an alkaloidal principle to which the name of *Wrightine* has been given. Its chemical constitution is said to be: $C_{24}H_{40}N_2$.

Therapeutic Applications.—To *Wrightine* are ascribed properties similar to those of the plants from which it is extracted. It is said, therefore, to be useful in diarrhœa and dysentery, and to possess, besides, anthelmintic and febrifuge powers. The drug has not been studied sufficiently to warrant more definite statements as regards its therapeutic action.

XYLOL.

This substance, also called *Xylene* and *Dimethyl-benzene*, is a hydrocarbon resembling benzine, and having a formula of C_8H_{10}.

Therapeutic Applications.—The drug is said to possess antiseptic powers, and is employed especially in the treatment of variola.

Administration.—The dose of *Xylol* is given as from 30 to 45 grains (2 to 3 grammes), and is best administered in wine.

ZINC.

The new compounds of this metal are few in number. The most important of these used at present in practical therapeutics will be described in the following paragraphs.

ZINC MERCURIC-CYANIDE.

A compound, the chemical nature of which is as follows: $Zn_4Hg(CN)_{10}$.

Physical Properties.—The agent occurs as a white powder.

Solubility.—*Zinc mercuric-cyanide* is insoluble in water.

Therapeutic Applications.—The *Cyanide of mercury and zinc* has been highly recommended as a non-irritating antiseptic. Its use, however, has not been very extensive.

ZINC SOZOIODOLATE.

Physical Properties.—This compound appears in the form of crystalline needles.

Solubility.—The drug is soluble in water in the proportion of 1 to 20 parts.

Therapeutic Applications.—The *Sozoiodolate of zinc* is highly serviceable in the treatment of acute and chronic blennorrhœa, and similarly in catarrhal inflammation of the mucous membrane of the nose and pharynx.

Administration. — In acute cases of gonorrhœa the *Sozoiodolate of zinc* may be employed in from ½ to 1½ per cent. solutions in distilled water, to which may be added 2½ per cent. of laudanum. In chronic cases, the laudanum may be substituted by the salicylate of bismuth.

ZINC SULPHYDRATE.

This body has a formula of $Zn(SH)_2$.

Physical Properties.—The medicament occurs as a white solid substance which decomposes in the dry state, and must, therefore, be kept under water.

Therapeutic Applications. — The *Sulphydrate of zinc* has been employed, both internally and externally, with good results, in the treatment of chronic eczema, psoriasis, and dermatoses of a vegeto-parasitic nature.

Administration.—The remedy is given internally in doses of from ½ to 2 grains (0.03 to 0.12 gramme) in pill-form. Externally, it is applied in the form of ointment of the strength of 10 per cent.[1]

[1] Among other recent compounds of zinc may be mentioned: the *Chrysophanate*, a brownish-red powder; the *Gynocardate*, a granular, yellowish powder, used as a substitute for gynocardic acid in diseases of the skin; and the *Permanganate*, a body similar to the potassium salt, said to be useful in all forms of urethritis in aqueous solutions of 1 in 4000.

NOTE.

The paragraphs I had prepared on *Monochlorphenol*, and which I afterwards enlarged and put under the heading of *Chlorphenol*, have unnecessarily been given a place on page 102. The same may be said of *Sodium Thiophen-sulphonate* twice included, first on pages 142 and then on 157, under the title of *Thiophen-sodium Sulphonate*. This has been due to an oversight of my typewriter. In reading the proof the matter was again overlooked.

D. C.

INDEX.